A STUDY TO ASSESS THE EFFECTIVENESS OF BILLIG'S EXERCISE IN REDUCING DYSMENORRHEA AMONG ADOLESCENT GIRLS AT GOVERNMENT HIGHER SECONDARY SCHOOL KALAPATTI, COIMBATORE

By

Reg. No: 301221103

A DISSERTATION SUBMITTED TO THE TAMIL NADU Dr. M. G. R. MEDICAL UNIVERSITY, CHENNAI IN PARTIAL FULFILLMENT OF REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

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EXTERNAL **INTERNAL**

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Dedicated

to Almighty God,

Lovable Parents,

Husband,

Daughter

Sister, Brothers,

Friends & Well Wishers

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I bow in reverence to the **Lord almighty**, the foundation of the knowledge and wisdom whose salutary benison enabled me to achieve this target.

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CHAPTER - I

Introduction

"Movement is a medicine for creating change in a person's physical, emotional and mental status"

- Carol Welch

Alan R (2009) stated that the term adolescence is derived from the Latin word 'adolescere' which means to grow up. It is a traditional stage of physical and psychological human development generally occurs from puberty to legal adult hood. Keane M (2010) explained that adolescence is a period of life from puberty to adulthood characterized by marked physiological changes, development of sexual feelings, efforts towards the construction of identity, and a progression from concrete to abstract thought. It is viewed as a transitional state, in which youths begin to separate themselves from their parents but still lack a clearly defined role in society. It is generally regarded as an emotionally intense and often stressful period.

Gavin M L (2010) stated that menstruation (a period) is a major stage of puberty in girls; it's one of the many physical signs that a girl is turning into a woman. Menarche is the onset of menstruation and it is one of the most significant milestones in a woman's life. The mean age at menarche varies from population to population and is known to be a sensitive indicator of various characteristics of population including nutritional status, geographical location, environmental conditions and magnitude of socioeconomic inequalities in a society. For most females, it occurs between the age of 10 and 16 years; however, it shows a remarkable range of variation. The normal range for ovulatory cycles is between 21 and 35 days. While

most periods last from three to five days, duration of menstrual flow normally ranges from two to seven days. For the first few years after menarche, irregular and longer cycles are common.

Emel Urun (2006) explained that dysmenorrhoea is one of the common problems experienced by many adolescents girls. There are two types of dysmenorrhoea, primary and secondary. The primary dysmenorrhoea is a periodic pain and cramps. It may last for 1-3 days of periods, when the chemical messenger called prostaglandin peak. Secondary dysmenorrhoea is a cramps caused by medical problems.

Rahma. Al. Kindi (2011) stated that, dysmenorrhoea is highly prevalent during adolescence, ranges from 60%to 93%. About 15% of adolescent describe their dysmenorrhoea as severe. There are pharmacological methods which are used for treating dysmenorrhoea. Preventive measures include exercise, massage and medication.

Gregory J Boyle (2004) stated that, physical exercise has been suggested as a non medical approach for managing the symptoms of dysmenorrhoea. It has been found useful to affect menstruation on many ways. Billig's exercises is one of the effective exercise for adolescents to relieve menstrual discomforts. It is an exercise which stretches the connective tissue around the pelvis, hip flexors and muscles of the abdomen.

William P. Metheny (2009) explained that alleviation of dysmenorrhoea may result for better mood, increases the sence of control and boosts the energy level. It

not only feels better by releasing endorphins (naturally occurring chemical in brain) which are reducing cramps but also strengthens the muscles in buttocks and thighs and help in the synthesis of prostaglandins, which may cause pain and help the adolescents to have a normal menstruation.

Midwives can play an important role in the transitional stages of adolescents developed especially the uncharted terrains of puberty, which everything is in flux. Being prepared and anticipating these changes helps the growing process dramatically and decreases fear and anxiety about the changes.

Need for the Study

Santina T (2010) stated that dysmenorrhoea is a gynaecological condition of pain during menstruation that interferes with daily activities among adolescent girls with prevalence of 65 – 90%, but it is also frequent among young adult women under 30 years of age. It is the leading cause of absenteeism in school among this age group.

Avasarala A. K (2010) noticed that the prevalence of dysmenorrhoea world wide is with rates ranging from 15.8- 89.5%.With higher prevalence rates reported in adolescents population.

Panchangam S (2010) concluded that 87.87% of adolescent girls are suffered from dysmenorrhoea in Tamil Nadu.

Geng M. C (2010) conducted a study on menstrual problems in rural areas of Tamilnadu among 550 school students. The study reported that, 38% school

absenteeism due to dysmenorrhoea and the activities affected by dysmenorrhoea include concentration in the class (59%), sports (51%), participation in the class (50%), socialization (49%), home work (35%), test taking skills (36%) and grades (29%).

Davins A.R, et.al, (2011) conducted a study on prevalence, associated morbidity and treatment of primary dysmenorrhoea among 970 adolescent girls and the result obtained was that the prevalence of the dysmenorrhoea was found to be 60-90% and 15% of adolescents described their dysmenorrhoea as severe. Dysmenorrhoea leads to high rates of school absence and activity non participation. Most adolescent with dysmenorrhoea self-medicine with over the counter preparations, few consult health care providers.

Amanda J Daley (2006) explained that many adolescent girls are familiar with the experience of dysmenorrhoea, which can contribute to significant physical and emotional distress and life disruption. It is important to assess the beliefs and experiences of all women with dysmenorrhoea including adolescents as early in gynaecologic care as possible. Exercise is an effective method for relieving menstrual symptoms.

Gregory J Boyle (2004) stated that, most of the adolescents feels that exercise is one of the effective method for treating dysmenorrhoea. In that Billing's, one of the first advocates of exercises for dysmenorrhoea in 1943, when a women with dysmenorrhoea have a contracted ligamentous bands in the abdomen. While exercising subsequently developed a series of stretching in the abdomen and pelvic

muscle, which claimed a high rate of symptom relief. This exercise was beneficial continued to enjoy wide spread acceptance with the evidence being mainly anecdotal.

Rima Gupta (2013) conducted a quasi experimental study to assess the effectiveness of active exercise on primary dysmenorrhoea among adolescent girls with 64 students between the age group of 17-19 years. A standardized tool ie, numerical rating pain score and menstrual distress questionnaire were used for assessing the severity of dysmenorrhoea. The study results reveal that, the active exercise is effective in reducing the menstrual pain.

Jerdy et.al, (2012) conducted an experimental study to assess the effectiveness of stretching exercise on dysmenorrhoea in adolescent girls which the subjects were requested to do for 8 weeks at home. He found that, stretching exercise are effective in reducing pain intensity, pain duration and the amount of pain killers used by girls with dysmenorrhoea.

By considering the review of literature, viewing the extent of the problem and understanding the advantages of Billig's exercise in the reduction of dysmenorrhoea, the researcher felt need for assessing the effectiveness of Billig's exercise in reduction of dysmenorrhoea by using self administered numerical pain scale.

Statement of the Problem

A study to assess the effectiveness of Billig's Exercise in reducing dysmenorrhea among Adolescent girls at government higher Secondary school Kalapatti, Coimbatore.

Objectives

- To assess the level of dysmenorrhoea among adolescent girls in the experimental and control group.
- To administer Billig's exercise for adolescent girls with menstrual pain in experimental group.
- To assess the effectiveness of Billig's exercise on menstrual pain among adolescent girls in experimental group.
- To compare the level of dysmenorrhoea among adolescent girls in the experimental and control group.
- To associate the level of dysmenorrhoea among adolescent girls with selected demographic variables.

Hypothesis

H_1: There is a significant difference between pre test and post test score of pain after administering Billig's exercise among adolescent girls at Government girls higher secondary school, Coimbatore. So there will be a significant effect of Billig's exercise in reducing dysmenorrheal among adolescent girls.

Operational Definitions

Effectiveness

It refers to the extent to which Billig's exercise help in reducing dysmenorrhoea as determined by significant difference in pretest and post test scores.

Dysmenorrhoea

In this study, it refers to the intensity of pain expressed by the adolescent girls during menstruation.

Billig's Exercise

In this study it refers to the pelvic tilt along with tightening of buttocks and muscles of abdomen followed by relaxation, which persists for 10-15 seconds and repeated 5-6 times a day during menstruation.

Adolescent

In this study it refers to the girls between the age group of 12-16 years, who are attained menarche and having pain during menstruation.

Assumptions

- Dysmenorrhoea patients experiences pain and it will affect the students day to day activities.
- They need alternative therapy for relief of pain.
- Billig's exercise helps to reduce pain during menstruation.
- After the practice of Billig's exercise they feel relief of pain .

CHAPTER – II

Review of literature

Review of literature lays foundation for a study and can also influence for new research ideas. A literature review plays a role at the end of the study, when researcher is trying to make sure of their feelings (Polit, 2009).

Review of literature was done for the present study which is presented in the Following Heading

- Literature review related to prevalence of dysmenorrhea.
- Literature review related to effectiveness of Billig's exercise.

Literature Review Related to prevalence of Dysmenorrhea

French. L (2009) conducted a study to find out the prevalence of dysmenorrhea among adolescent girls and its effect on recurrent short term school absence and the result obtained was the prevalence of dysmenorrhea was 75% and 20% seeks medical advice for menstrual pain. In majority of cases, the pain starts with the onset of menses and lasts 1-3 days.

Suresh K. Kumbhar (2011) A cross sectional study was conducted among 183 adolescent girls (14-19yrs) in schools and colleges at Kadapa town, Andrapradesh using a semi structured questionnaire to estimate the prevalence of dysmenorrhea and its impact on quality of life among adolescent girls. The result reported that, out of 183 adolescent girls, 119(65%) were dysmenorrheic, 68.4% and 61.2% were from the urban and rural areas respectively. Out of 81 adolescent girls with family history of

dysmenorrhoea 60 (74.1%) adolescent girls were dysmenorrheic. Sickness absenteeism was seen among 47.9% dysmenorrhoric girls. Quality of life was significantly reduced among adolescent girls. Almost 73.1% of rural girls relied on self help technique to manage the dysmenorrhea as compared to urban girls (55.2 %).

Latte P M, et.al, (2011) conducted a cross sectional study on prevalence of dysmenorrhea among college students to determine the effect on health related quality of life and the prevalence was found to be 68.07% and was significantly higher in coffee consumers, menstrual bleeding more than 7 days and those who have family history of dysmenorrhea.

Agarwal A K, et.al, (2010) conducted an exploratory study on prevalence of dysmenorrhea and the severity of problem with associated symptoms and general health status among high school adolescent girls of Gwalior and the result obtained was the prevalence of dysmenorrhea in adolescent girls was 76.67% and the three most common symptoms present on both days, that is day before and first day of menstruation were lethargy and tiredness, depression and inability to concentrate in work.

Davis A R, et.al, (2011) conducted a study on prevalence, associated morbidity and treatment of primary dysmenorrhea among 970 adolescent girls and the result obtained was that the prevalence of dysmenorrhea was found to be 60-90% and 15% of adolescents described their dysmenorrhea as severe. Dysmenorrhea leads to high rates of school absence and activity non- participation. Most adolescent with dysmenorrhea self – medicate with over the counter preparations, few consult health care providers.

Malhotra C, et.al, (2008) conducted a study to assess the types and frequency of problems related to menstruation among adolescent girls and the effect of these problems on daily routine .More than a third (35.9%) of the study subjects were in the age group 13-15 years followed by 17-19 years, 15- 17 years respectively. Mean age of the study participants were calculated to be 16.2 years. Dysmenorrhea (67.2%) was the commonest problem and 63.1% had one or the other symptoms of premenstrual syndrome (PMS). Other related problems were present in 55.1% of study subjects. Daily routine of 60% girls were affected due to prolonged bed rest, missed social activities / commitments, disturbed sleep and decreased appetite. 17.24% had to miss classes and 25% had to abstain from work.

Cynthia. F, et.al, (2010) conducted a study on prevalence of dysmenorrhea among adolescent girls and the result obtained was found to be 45-95 % and dysmenorrhea seems to be the most common gynecological condition in women regardless of age and nationality.

Jackson. C (2010) conducted an epidemiological study of the prevalence of dysmenorrhea in 4203 middle and high school students and the result was found to be 21% with 902 dysmenorrheic adolescents in that 453 were in the age group of 14-16 years and 449 were in the age group of 16-18 years. 98% of the adolescent reported pelvic pain, 70% asthenia, 59% low back pain, and 30% reported nausea and vomiting .

Saha. R (2011) conducted a cross sectional study to assess the incidence of dysmenorrhea and menstrual hygiene practices among adolescent girls from selected schools the study sample consists of 160 students. The results revealed a high

prevalence (94.4%). Measures taken to relieve dysmenorrhea were found to be: intake of certain types of domestic hot drinks (43.0%), taking analgesics (22.5%), and (66.2%) performed physical activities during menstrual period to relieve pain.

Francoise (2012) conducted an exploratory study on etiology of dysmenorrhea among adolescent girls and found that an elevated level of prostaglandin has been found in the menstrual blood of adolescent girl with dysmenorrhea. The prostaglandin mediates the pain sensation and stimulates endometrium contraction and increased urinary secretion of leukotrienes E(4) inflammatory mediators known to cause potent vasoconstriction and uterine contractions cause dysmenorrhea symptoms in adolescents.

Literature Review Related to Billig's Exercise on Dysmenorrhea

Jima Mathew (2013), an experimental study was conducted in selected schools in Karnataka, Mangalore to assess the effectiveness of billig's exercise on dysmenorrhea. The researcher take 168 adolescent girls in selected schools. The study results revealed that, the intensity of pain is reduced in about 72.8% of the students.

Abbaspour (2010) an experimental study was conducted to estimate the effect of exercise on dysmenorrhoea among 250 adolescents in Iran. About 55 percent of adolescents were suffering from dysmenorrhoea. The researcher assessed the effect of 12 week physical fitness programme on psychological and physical symptoms of dysmenorrhoea. The result showed that the training programme contributed to substantial reduction in dysmenorrhoea from 55 to 39 percent. The researcher concluded that selected physical fitness exercises positively influenced menstrual symptoms.

Metheny. W. P (2009) conducted a study in Georgia considers primary dysmenorrhea from a biopsychosocial perspective in examining the relationship between physical exercise and menstrual pain. Despite widespread claims of the benefits of exercise for perimenstrual symptoms, the evidence seems weak. Stronger evidence indicates that exercise helps relieve stress and elevates mood and that stress heightens menstrual discomfort. Student nurses (n = 176) completed a questionnaire distinguished as a general health survey that contained these measures. The hierarchical regression analysis demonstrated that, contrary to the expected, regular exercise increased with the severity of menstrual symptoms, after controlling for medications, disposition, perceived stress, and mood. The findings suggest that exercise presents a trade off; it relieves the stress that may intensify dysmenorrhea, yet it may aggravate the same symptoms.

Br. J .Gen Pract (2009) a study was conducted on billig's exercise on primary dysmenorrhea. In this study he takes n= 36 students with dysmenorrhea, only 26 participants completing the follow up. The study reveals that, exercise can reduce the intensity of pain in adolescent girls.

Suckling. J (2009) conducted a randomized clinical trial study to determine the effect of exercise on primary dysmenorrhea among 150 high school girls in Chennnai city and the result obtained was that the intensity of the pain in the exercise group declined from 8.59 to 4.63 in the third menstrual period and 2. 84 in the fourth menstrual period and 2.84 in the fourth menstrual period .The average of the duration of pain declined from 7.15 to 4.22 in the third menstrual period. In conclusion the exercise can decrease the duration and severity of dysmenorrhea.

Pattison. H. M (2009) conducted an experimental study among 69 technical college female students in Taiwan to assess the effects of exercise on dysmenorrhea. Five tools were used to collect pretest and post test data in each section. Thirty one of the experimental participants reported that exercise was helpful, a thirty three were satisfied with exercise and concluded that exercise was effective to reduce pain and anxiety during menstruation.

Morse (2006) commented that approximately 10% of the women were severely affected by dysmenorrhoea during the reproductive years. Relaxation instructions are provided to a experimental group and drug treatment were given to control group. The study revealed that experimental group have significant positive benefits from the relaxation technique.

Dos Santos (2004) conducted a study on pain management. The subjects were 61 patients with menstrual symptoms given relaxation technique for 24 weeks and various treatment are proposed. The result showed that subjects pain level are decreased after getting billig's relaxation technique .

Mariyam Rostami (2007) conducted a study to determine the effect of exercise on primary dysmenorrhoea in high school girls. The study was randomised clinical trial of 150 students suffering from severe dysmenorrhoea, two groups - exercise group and non exercise group assessed the intensity of pain, duration of pain, number of medicines used for two periods. The intensity of pain in the exercise group reduced from 8.59 to 4.63 in the 3rd period and 2.84 in the 4th period. The average duration declined from 7.15 hours to 4.22hrs in 3rd period and 2.23 in the 4th period. The

average use of sedative tablets also decreased from 1.3 tablets to 0.35 in the 3rd period and 0.0 tablets in the 4th period.

Blakey, et.al., (2008) conducted the study on 654 university students aged between 18 and 25 at College of Medical and Dental Sciences. The participants were evaluated for their age, height, weight, ethnicity, and current smoking behaviour through the Women‘s Health and Lifestyle Questionnaire. The researchers also used a modified version of the Godin Leisure-Time Exercise Questionnaire to analyze the exercising pattern of the study participants. The response rate noted during the study was 91.3%. Menstrual pain rating using a visual analogue scale (VAS) and the verbal multidimensional pain score (VMPS) demonstrated that participating in physical exercise would not confer any reduction in PD.

Julie. A. Aganoff, et.al, (2006) conducted a study to examine the effect of regular moderate exercise on mood states and menstrual cycle symptoms at Australia. A group of female regular exercisers (N=97), and a second group of female non exercisers (N=159), completed the Menstrual Distress Questionnaire (MDQ) and the Differential Emotions Scale (DES-IV) Premenstrualy, Menstrually and Intermenstrually. Multivariate Analyses of Covariance (MANCOVAS) revealed significant effect for exercise on negative mood states and physical symptoms, and significant effects on all measures across menstrual cycle phase. The regular exercises obtained significantly lower scores on impaired concentration, negative effect, behavior change and pain. No differences were found between groups on positive effect and other physical symptoms.

Saher. M. Soliman (2012) conduced an experimental study was conducted to assess the effectiveness of pelvic rocking exercise for dysmenorrhoea among 30 adolescent girls in Tamilnadu. The subjects were selected by lottery method to the experimental group and were administered pelvic rocking exercise. After 3 weeks, post-test score showed that pain had decreased from eight to four. The researcher concluded that pelvic rocking exercise was effective in the reduction of dysmenorrhoea among adolescent girls. Therefore, pelvic rocking exercise can be used as a supportive therapy in adolescents to alleviate dysmenorrhoea.

Jerdy, et.al, (2012) conducted an experimental study to assess the effectiveness of stretching exercise on primary dysmenorrhoea in adolescent girls which the subjects were requested to do for 8 weeks (3 days per week, 2 times per day, 10 minutes each time) at home. He found that stretching exercise were effective in reducing pain intensity, pain duration and the amount of pain killers used by girls with primary dysmenorrhoea.

Rima Gupta (2013) A quasi experimental study was conducted in two colleges of nursing, to assess the effectiveness of active exercise on primary dysmenorrhoea among adolescent girls with 64 students between age group of 17-19 years. A standardized tool ie, numerical rating pain score and menstrual distress questionnaire were used for assessing the severity of primary dysmenorrhoea. The study results reveal that the active exercise is effective in reducing the menstrual pain.

Conceptual Framework

The concept is a thought frame or mental images in mind in response to learning something new. A framework is a basic structure supporting anything. A conceptual framework deals with abstraction (concept), which is assembled by nature of their relevance to a common theme (Christenson, 1990).

According to Wiedenbach's the practice of nursing comprises a wide variety of services based on goal directed care. It consists of three steps

Step 1 : Identify the Need for Help

Identification involves viewing the patient as an individual with unique experiences and understanding the patient's perception of the condition. It includes the following components.

- **General Information**

  This comprises of the demographic variables

- **Central Purpose**

  Central purpose is to reduce the dysmenorrhea .

- **Prescription**

  It includes the intervention to meet the central purpose that is providing billig's exercise.

Step 2 : Ministering the Needed Help

Ministration refers to provision of needed help.

- **Agent**

  The agent is the practicing nurse or a designee who has the personal attributes, capacities and competence to provide nursing care. Here the agent was nurse investigator.

- **Recipient**

The adolescent girl who are having menstrual pain.

- **Goal**

It is the nurses desired outcome. Here the goal is to reduce the pain of adolescent girls who is having the menstrual pain.

- **Means**

Means are the activities and the device used by the nurse investigator to achieve the goal. Here the nurse investigator used the Billig's exercise.

- **Framework**

It refers to the facilities in which the nursing care is provided. Here the framework is Govt. Higher Secondary School, Kalapatti, Coimbatore.

Step 3 : Validating that the Need for Help was Met

Validation refers to adolescent girl functional ability that was restored as a result of the help given. It is validated that the needed help was delivered in achieving the central purpose. This step involves the post test done after ministering the help and analysis was done to make suitable decision and recommendation action to continue or modify the nursing action.

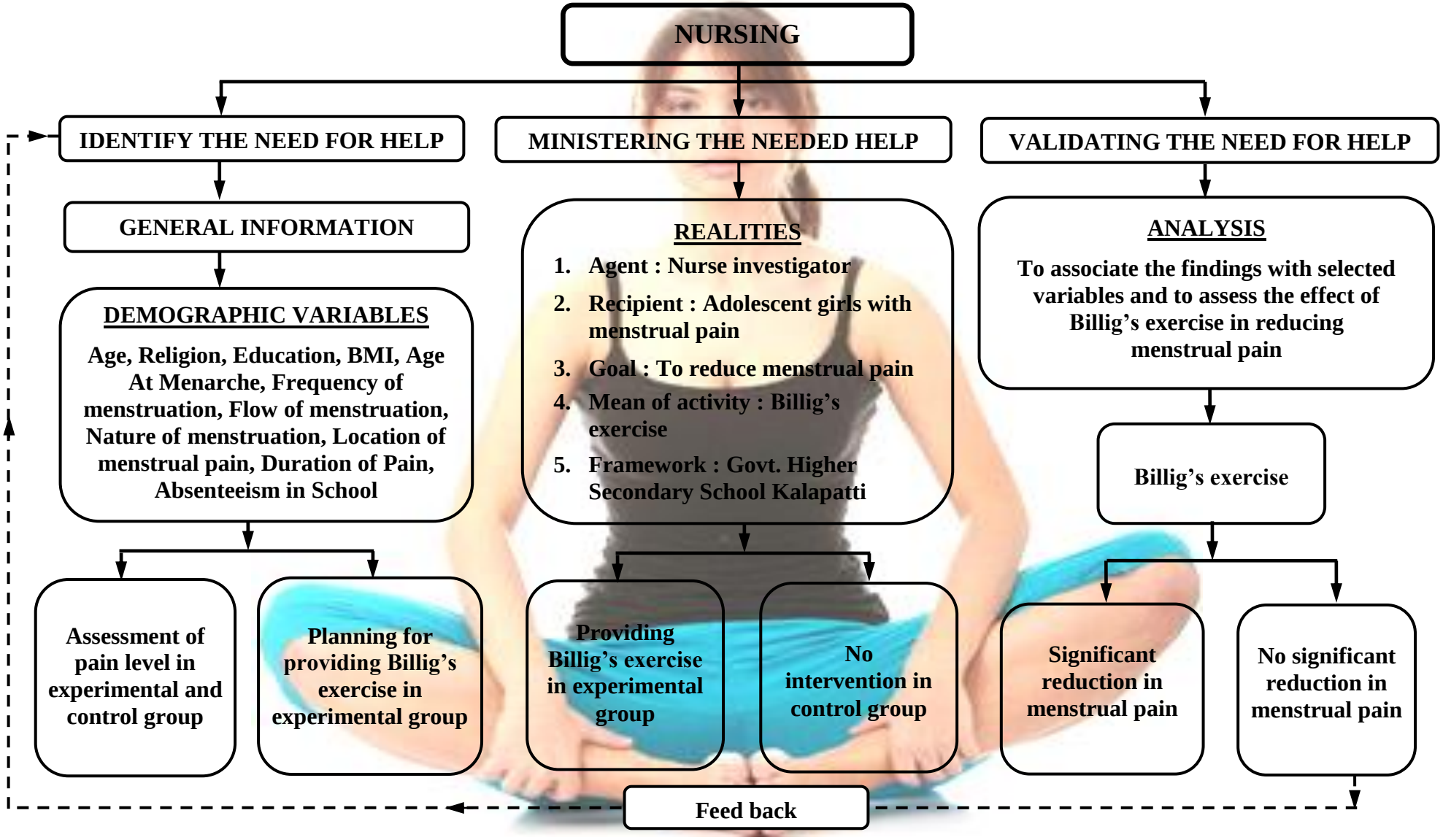

Figure. 1 Modified Conceptual Framework Based on Ernestine Wiedenbach's Helping Art of Clinical Nursing Theory (1964)

CHAPTER - III

Research Methodology

Methodology is the study which indicates the general pattern of the research approach and research design that includes the steps of procedures and strategies and analyzing the data in the investigation.

This chapter explains the methodology adopted by the researcher to assess the effectiveness of Billig's exercise on dysmenorrhoea among adolescent school students in Government Girls high School Kalapatti, Coimbatore. It deals with the research approach, research design, setting of the study, variables, population, sample size, sampling technique, criteria for selection samples, description of the tool, pilot study, data collection procedure and plan for data analysis.

Research Approach

Experimental approach is a subtype of quantitative research approach was used for the present study.

Research Design

The research design provides an overall plan for conducting the study. Pretest post test experimental and control group design was adopted for the present study. The researcher took two groups experimental and control group.

The pre-test measurement was assessed by means of a numerical pain rating scale from adolescent girls. In both the experimental and control group which was

depicted as $O_1$and O_3 respectively. The Billig's exercise was provided to the experimental group for 1day before menstruation and first 2 days of menstruation, 5 - 6 times a day for 20 minute which was depicted as X. The post test was conducted using same numerical pain scale from both the group which was depicted as O_2 and O_4.

E - O_1 X O_2

C - O_3 X O_4

E - Experimental group

O - Observation

O_1 - Pretest

O_2 - post test

O_3 – Pretest

O_4 – Post test

X - Billigs exercise

C – Control group

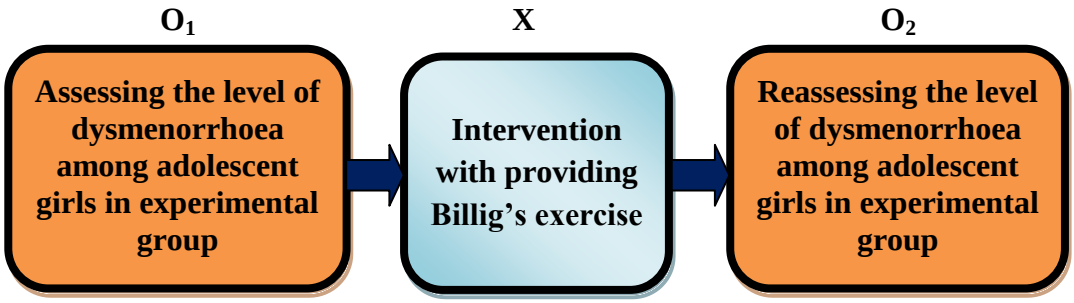

Figure. 2 The schematic Representation of the Study Design in Experimental Group

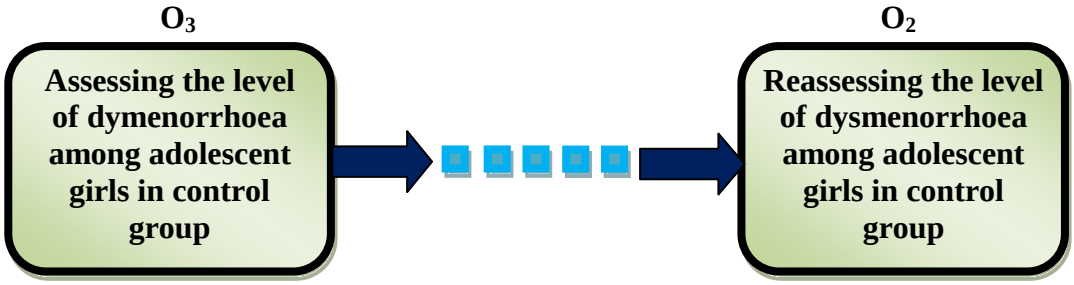

Figure. 3 The schematic Representation of the study design in Control Group

Setting of the Study

The study was conducted among adolescent school students in Government. Girls Higher Secondary School Kalapatti, Coimbatore, about 300 students, which is situated 4km from PPG College of Nursing.

Variables

The dependent variable was the pain level of dysmenorrhoea. Independent variable was live demonstration regarding Billigs exercise. The influencing variables were demographic variables such as age, education, religion, BMI, age at menarche, duration of menstruation, frequency of menstruation, duration of menstrual pain, flow of menstruation, location of menstrual pain, associated symptoms during menstruation, psychological disturbances during menstruation, medication, interference of the study due to menstrual pain.

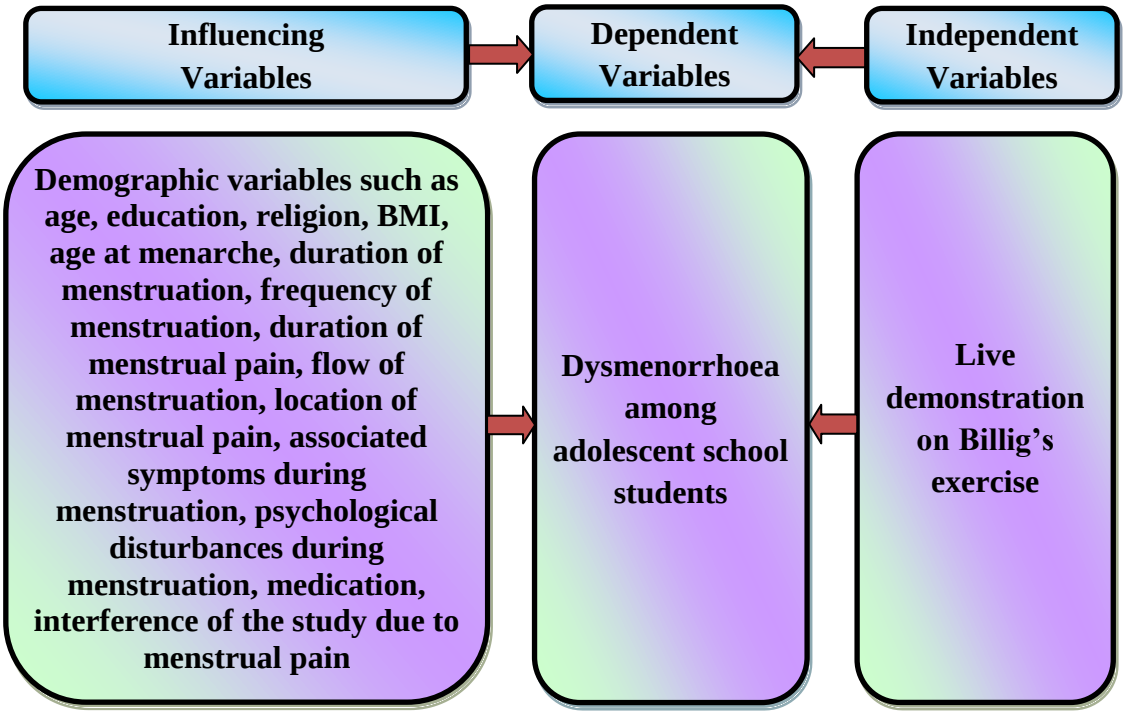

Figure. 4 The Schematic Representation of the Variables

Population

The population of the study includes the adolescent girls who are studying in 8^{th}, 9^{th}, 10^{th} and11^{th} standard with menstrual pain at Govt. Higher Secondary School Kalapatti, Coimbatore.

Sample Size

The sample size was included for this study consists of 60 adolescent girls who fulfilled the inclusive criteria, with experimental group 30 and control group 30.

Sampling Technique

The samples were selected using purposive sampling technique, a type of non probability sampling method.

Criteria for Selection of Samples

Inclusive Criteria

- Adolescent girls students who are suffering from dysmenorrhoea.
- Adolescent girls students who are available during the period of data collection.
- Adolescent girls students who are willing to participate in this study.
- Adolescents girls who have attained menarche and are in the age group of 12- 16 years.

Exclusive Criteria

- Adolescent girls who are not willing to participate.
- Adolescent girls who are undergoing treatment by physician for dysmenorrhoea.

Description of Tool

The researcher had developed a tool after referring the review of literature to assess the menstrual pain and get the opinion from experts of Obstetrics and Gynaecologic departments to assess the effectiveness of Billig's exercise to reduce dysmenorrhoea among adolescent girls. The tool contains the following sections.

Section - A Demographic Variables and Menstrual Variables

Demographic variables and menstrual variables which include age, body mass index, duration of menstruation, flow of menstruation, age at menarche, nature and location of menstrual pain, associated symptoms during menstruation, inference of the study due to menstruation.

Section - B Self Administered Numerical Pain Scale

Self Administered numerical pain scale was used to measure the pain experienced by the adolescent girls during the menstruation period. This scale is marked from 0- 10 encompassing 10 equal division 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10. The pain intensity is a subjective experience and the difference between minimum pain and maximum pain could be measured objectively with equally divided numerical digits As the level of scores increases, the intensity of pain also increases.

In this scale, pain intensity was scored arbitrarily as follows.

0 – No pain

1-3 – Mild

4-6 – Moderate

>7 - Severe

Testing of the Tool

Content Validity

The tool was given to six experts of obstetrics and gynaecological nursing. All suggestions and comments given by them were duly considered and corrections were made after discussion with the research guide .

Reliability of the Tool

The tool is highly reliable because the scale used was standardized. The reliability of the tool was obtained by spearman split half technique. The reliability of numerical pain intensity scale was 0.7380. Hence the reliability of the tool was satisfactory.

Pilot Study

The pilot study was conducted to make sure that the tool was capable of eliciting responses from respondents. It was conducted among 6 samples for a period of one week, 3 for experimental group and 3 for control group at Govt. Higher Secondary school, Kalapatti, Coimbatore. The pretest was conducted by using the numerical pain scale from the experimental and control group. Soon after the pretest, the Billig's exercise are taught to the adolescent girls in the experimental group for one day before menstruation, day1 and day2 of menstruation 5-6 times a day. Post test was done by using same numerical pain scale in both the groups. The pilot study showed that there was a decrease in the pain level in post test of experimental group compared to the control group.

Data Collection Procedure

The formal permission was obtained from the Principal of Govt. Higher Secondary School Kalapatti, Coimbatore to conduct the study with assurance to abide

by the rules and regulations of the school. The study was done for the period of one month from 1-1-2014 to 31-1-2014. The samples were selected by purposive sampling technique on the basis of inclusion criteria. Informed consent was taken from the samples.

Out of 60 samples, 30 were considered as experimental group and 30 were considered as control group. After the general instructions, the investigator collected the demographic and menstrual data. Pre test was done by means of pain rating scale from both experimental and control group. After the pretest, intervention through providing Billig's exercise was given to the experimental group on day before menstruation, day 1 and day 2 of menstruation, 5 -6 times a day. Post test was done to assess the level of dysmenorrhoea among both groups by using same numerical pain scale.

Plan for Data Analysis

- Descriptive statistics were used to analyze the frequency, percentage, mean, standard deviation of the following variables.
- Inferential statistics were used to determine the relationship and comparison to identify the difference.
    - Paired 't' test was used to compare the pretest and post test score of pain of adolescent girls with dysmenorrhoea.
    - Independent 't' test was used to compare the pain score of adolescent girls with dysmenorrhoea of both the experimental and control group.
    - Chi- square test was used to assess the association between menstrual pain score with selected demographic variables.

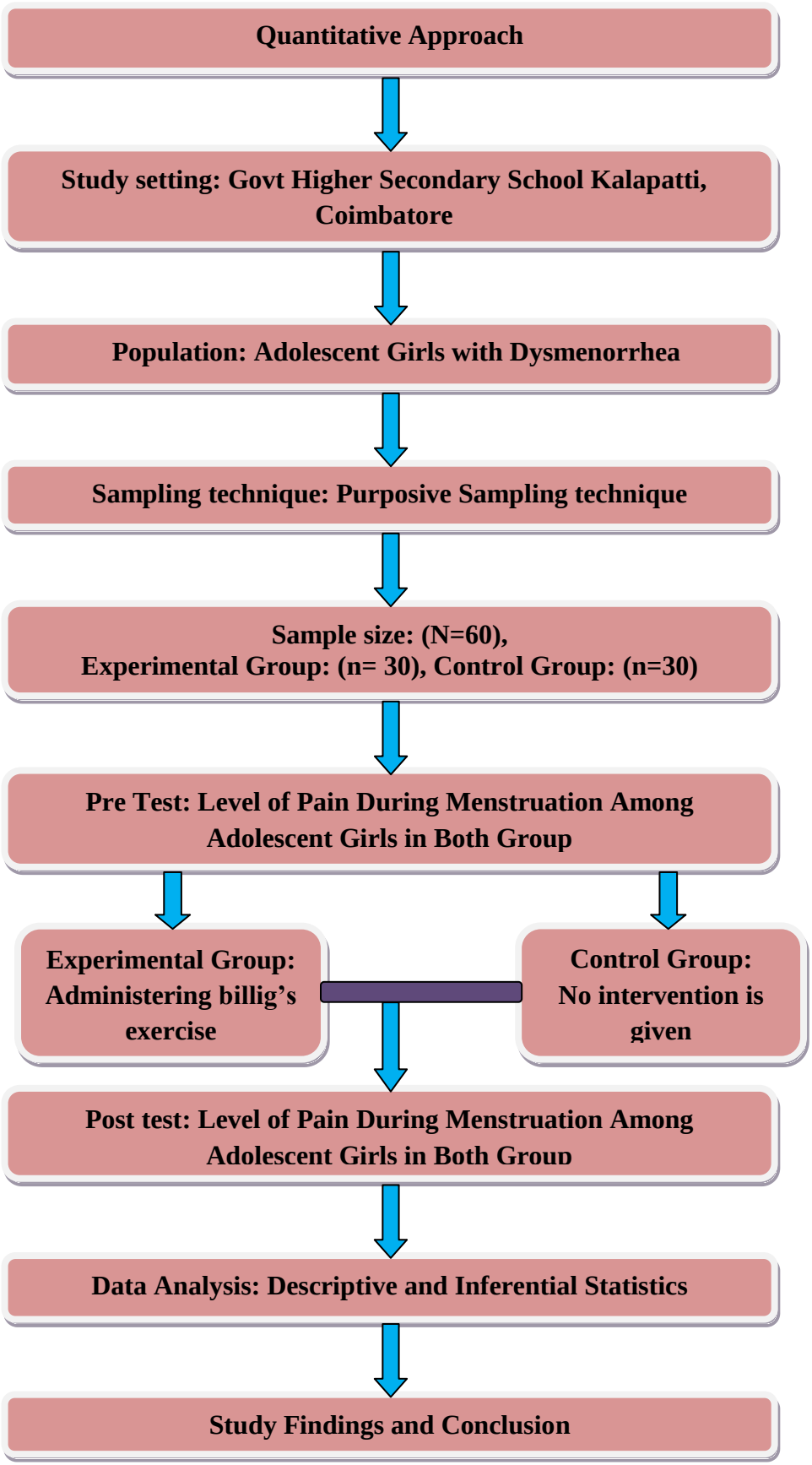

Figure. 5 The Overall View of Research Methodology

CHAPTER – IV

Data Analysis and Interpretation

This chapter deals with the analysis and interpretation of data collected from the adolescent girls, to assess the effectiveness of Billig's exercise in reducing menstrual pain among adolescent girls at Government Higher Secondary School, Kalapatti, Coimbatore.

The findings based on the descriptive and inferential statistics analysis were presented under the following headings.

Section I : Description of demographic variables of adolescent girls with dysmenorrhea regarding the effectiveness of billig's exercise on reducing menstrual pain in experimental and control group at Government Higher Secondary School, Kalapatti, Coimbatore.

Section II : Distribution of statistical value of pretest score regarding menstrual pain among adolescent girls of experimental and control group.

Section III : Distribution of statistical value of pretest and posttest score regarding menstrual pain among adolescent girls of experimental group.

Section IV : Distribution of statistical value of pre test and post test score regarding menstrual pain among adolescent girls of control group.

Section V : Distribution of statistical value of post test score regarding menstrual pain among adolescent girls of experimental and control group.

Section VI : Association of selected demographic variables with post test score regarding menstrual pain among adolescent girls with dysmenorrhea in experimental group.

SECTION - I

Table. 1 Description of Demographic Variables of Adolescent Girls with Dysmenorrhoea Regarding the Effectiveness of Billig's Exercise in Reducing Menstrual Pain in Experimental and Control Group at Government Higher Secondary school Kalapatti, Coimbatore

(N = 60)

S.No.	Demographic Variables	Experimental group (n = 30)		Control group (n = 30)	
		f	%	f	%
1.	**Age of the student**				
	a) 12-14 years	18	60	15	50
	b) 15-16 years	12	40	15	50
2.	**Education**				
	a) 8th standard	5	16.67	8	26.67
	b) 9th standard	11	36.67	8	26.67
	c) 10th standard	4	13.33	5	16.66
	d) 11th standard	10	33.33	9	30
3.	**Religion**				
	a) Hindu	19	63.33	21	70
	b) Christian	3	10	7	23.33
	c) Muslim	8	26.67	2	6.67
4.	**BMI**				
	a) < 20	1	3.33	1	3.33
	b) 20-25	28	93.34	28	93.34
	c) > 25	1	3.33	1	3.33
	d) > 30	0	0	0	0

(Table 1 continues)

(Table 1 continued)

S.No.	Demographic Variables	Experimental group (n = 30)		Control group (n = 30)	
		f	%	f	%
5.	**Age at menarche**				
	a) < 12 years	26	86.67	8	26.67
	b) 12-13 years	4	13.33	13	43.33
	c) 14-15 years	0	0	9	30
6.	**Duration of menstruation**				
	a) 2-3 days	2	6.67	14	46.67
	b) 4-5 days	24	80	13	43.33
	c) >5 days	4	13.33	3	10
7.	**Frequency of menstruation**				
	a) Once in 28 days	12	40	2	6.67
	b) Once in 29-30 days	15	50	22	73.33
	c) Once in 31-35 days	3	10	6	20
8.	**Duration of menstrual pain**				
	a) < 12 hrs	3	10	2	6.67
	b) 12- 24 hrs	22	73.33	23	76.67
	c) >24 hrs	5	16.67	5	16.66
9.	**Flow of menstruation**				
	a) Scanty	1	3.33	2	6.67
	b) Moderate	27	90	17	56.67
	c) Heavy	2	6.67	11	36.66
10.	**Nature of menstrual pain**				
	a) Pricking	3	10	1	3.33
	b) Throbbing	1	3.33	5	16.67
	c) Cramping	24	80	23	76.67
	d) Squeezing	2	6.67	1	3.33

(Table 1 continues)

(Table 1 continued)

S.No.	Demographic Variables	Experimental group (n = 30)		Control group (n = 30)	
		f	%	f	%
11.	**Location of menstrual pain**				
	a) Lower abdomen	20	66.67	17	56.67
	b) Back and thighs	9	30	10	33.33
	c) Pubic area	1	3.33	3	10
	d) General body pain	0	0	0	0
12.	**Associated symptoms during menstruation**				
	a) Nausea	3	10	14	46.67
	b) Vomiting	19	63.33	14	46.67
	c) Diarrhea	8	26.67	2	6.66
	d) Giddiness	0	0	0	0
13.	**Psychological disturbances during menstruation**				
	a) Never	8	26.67	3	10
	b) Occasionally	19	70	22	73.34
	c) Frequently	1	3.33	4	13.33
	d) Always	0	0	1	3.33
14.	**Using of medication during menstrual pain**				
	a) Yes	0	0	12	40
	b) No	30	100	18	60
15.	**Inference of the study due to menstrual pain**				
	a) Sometimes missed the school	24	80	5	16.67
	b) Regularly missed	1	3.33	4	13.33
	c) Missed in one day of their period	5	16.67	18	60
	d) Missed on the second day of menstrual period	0	0	3	10

Table I shows the description of demographic variables of adolescent girls with dysmenorrhea in experimental and control group.

- Regarding the age of the adolescent girls, in the experimental group, 18(60%) adolescent girls were between 12-14 years, 12(40%) were in the age group between 15-16 years. Among control group, 15(50%) adolescent girls were between 12-14 years, 15 (50%) were between 15-16 years.

- With regard to religion, in the experimental group, 19(63.33%) adolescent girls were Hindu, 8(26.67%) adolescent girls were Muslim and 3(10%) were Christians. In the control group, 21(70%) adolescent girls were Hindu, 2(6.67%) were Muslim and 7(23.33%) were Christians.

- Considering the education, in the experimental group, 5(16.67%) adolescent girls were in 8^{th} standard, 11(36.67%) were in 9^{th} standard, 4(13.33%) were in 10^{th} standard and 10(33.33%) were in 11^{th} standard. In the control group, 8(26.67%) adolescent girls were in 8^{th} standard, 8(26.67%) were in 9^{th} standard, 5(16.67%) were in 10^{th} standard and 9(30%) were in 11^{th} standard.

- Regarding the BMI, in the experimental group, 1(3.33%) adolescent girl was in less than 20 (under weight), 28(93.33%) was 20-25(optimal weight), 1(3.33%) were in greater than 25 (over weight) and none was in greater than 30 (obese). In the control group, 1(3.33%) adolescent girls were in less than 20(under weight), 28(93.34%) were 20-25 (optimal weight), 1(3.33%) were in greater than 25 (over weight and none were in greater than 30 (obese).

- With the regard to the age at menarche, in the experimental group, 26(86.67%) adolescent girls attained menarche between the age group greater than 12 years,

4(13.33%) were between 12-13 years and none were attained the menarche between 14-15 years. In the control group, 8(26.67%) adolescent girls attained menarche between the age group of greater than 12 years, 13(43.33%) were between 12-13 years and 9(30%) were at the age group of 14-15 years.

- On considering the duration of menstruation, in the experimental group, 2(6.67%) adolescent girls had 2-3 days duration, 24(80%) had duration of menstruation for 4-5 days and 4(13.33%) had duration for more than 5 days. In the control group, 14(46.67%) adolescent girls had 2-3 days duration of menstruation, 13(43.33%) had duration for 4-5days and 3(10%) had more than 5 days duration.

- On considering the frequency of menstruation, in experimental group, 12(40%) had menstruation once in 28 days, 15(50%) had once in 29-30 days and 3(10%) had frequency of menstruation once in 31-35 days. In control group, 2(6.67%) had menstruation once in 28 days, 22(73.33%) had once in 29-30 days and 6(20%) had frequency of menstruation once in 31-35 days.

- Regarding the duration of menstrual pain in experimental group, 3(10%) adolescent girls had menstrual pain for less than 12hrs, 22(73.33%) had pain for 12-24hrs and 5(16.67%) had pain for greater than 24 hrs. In control group, 2(6.67%) adolescents girls had menstrual pain for less than 12 hrs, 23(76.67%) had pain for 12-24 hrs and 5(16.67%) had pain for greater than 24hrs.

- Regarding the flow of menstruation, in experimental group, 1(3.33%) adolescent girl had scanty flow, 27(90%) had moderate flow, and 2(6.67%) had heavy flow. In control group, 2(6.67%) adolescents girls had scanty flow, 17(56.67%) had moderate flow and 11(36.67%) had heavy flow.

- On considering nature of menstrual pain, in experimental group 3(10%) of adolescent girls had pricking pain, 1(3.33%) had throbbing pain, 24 (80%) had cramping pain and 2(6.67%) had squeezing pain. In control group, 1(3.33%) of adolescent girls had pricking pain, 5(16.67%) had throbbing pain, 23(76.67%) had cramping pain and 1(3.33%) had squeezing pain.

- Regarding the location of menstrual pain in experimental group, 20(66.67%) of adolescent girls had lower abdominal pain, 9(30%) had back and thighs, 1(3.33%) had pain in pubic area and none of them had general body pain. In control group, 17(56.67%) of adolescent girls had lower abdominal pain, 10(33.33%) had pain in back and thighs, 3(10%) had pain in pubic area and none of them had general body pain.

- Regarding the associated symptoms during menstruation in experimental group, 3(10%) of adolescent girls having nausea, 19(63.33%) having vomiting, 8(26.67%) having diarrhoea and none of them having giddiness in their periods. In control group, 14(46.67%) of adolescents girls having nausea in their periods, 14(46.67%) having vomiting, 2(6.66%) having diarrhea and none of them having giddiness in their periods.

- Regarding the psychological disturbances during menstruation in experimental group, 8(26.67%) of adolescent girls had never, 21(70%) had occasionally,1(3.33%) had frequently and none of them had always. In control group, 3(10%) of adolescent girls had never, 22(73.34%) had occasionally, 4(13.33%) had frequently and 1(3.33%) had always.

- Regarding using of medication in experimental group, no one had taken medication. In control group, 12(40%) had taken the medication and 18(60%) had not taken medication.

- Regarding the inference of the study due to menstruation in experimental group, 24(80%) of adolescents girls were sometimes missed the school, 1(3.33%) were regularly missed the school, 5(16.67%) were missed in on day of the school and no one missed the school in their second day of period. In control group, 5(16.67%) of adolescent girls were sometimes missed her school, 4(13.33%) were regularly missed the school, 18(60%) were missed the on day of school and no one missed the school in their second day of period.

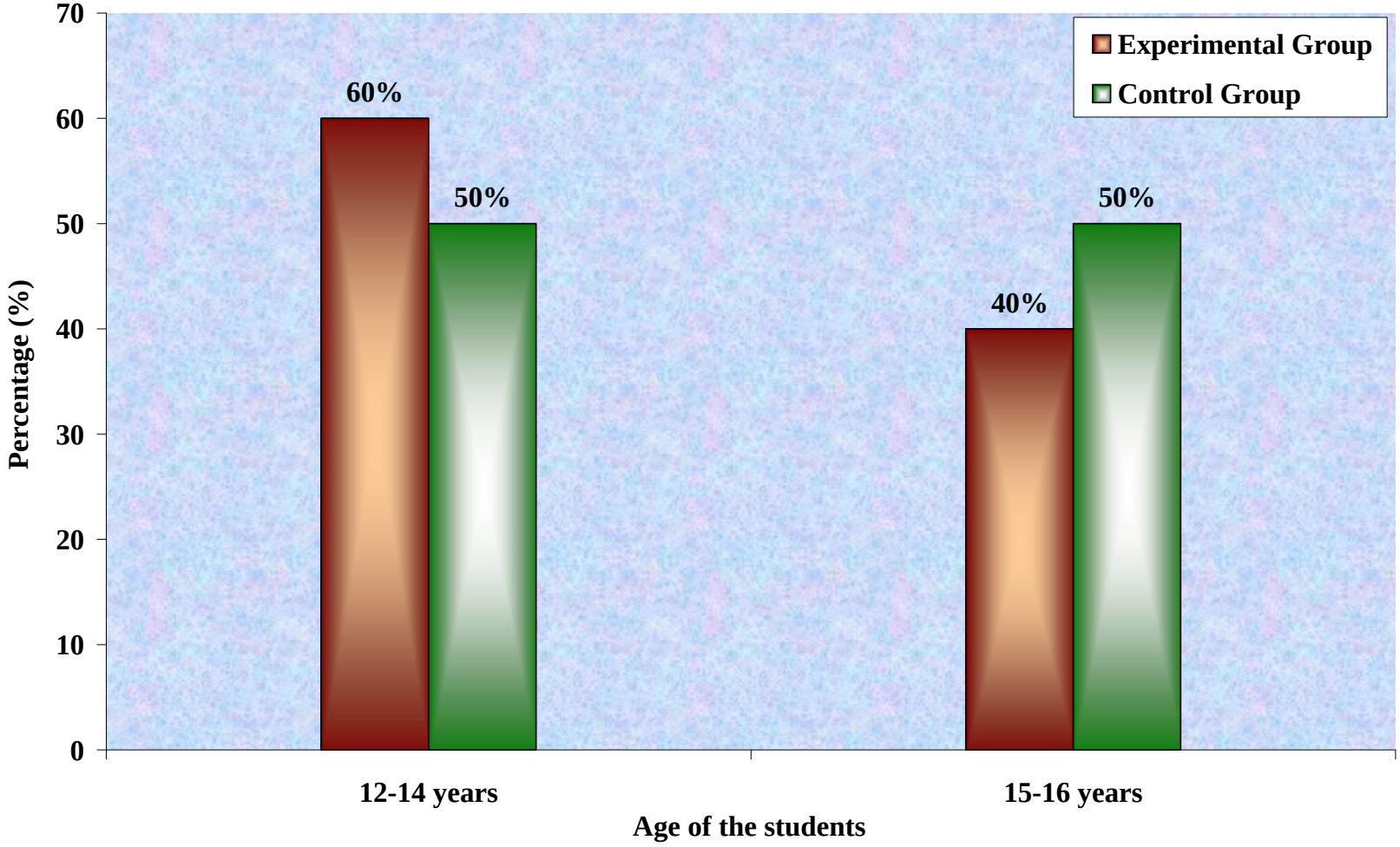

Figure. 6 Graphical Representation of Demographic Variables of Adolescent Girls According to the Age of the student in Both Experimental and Control Group

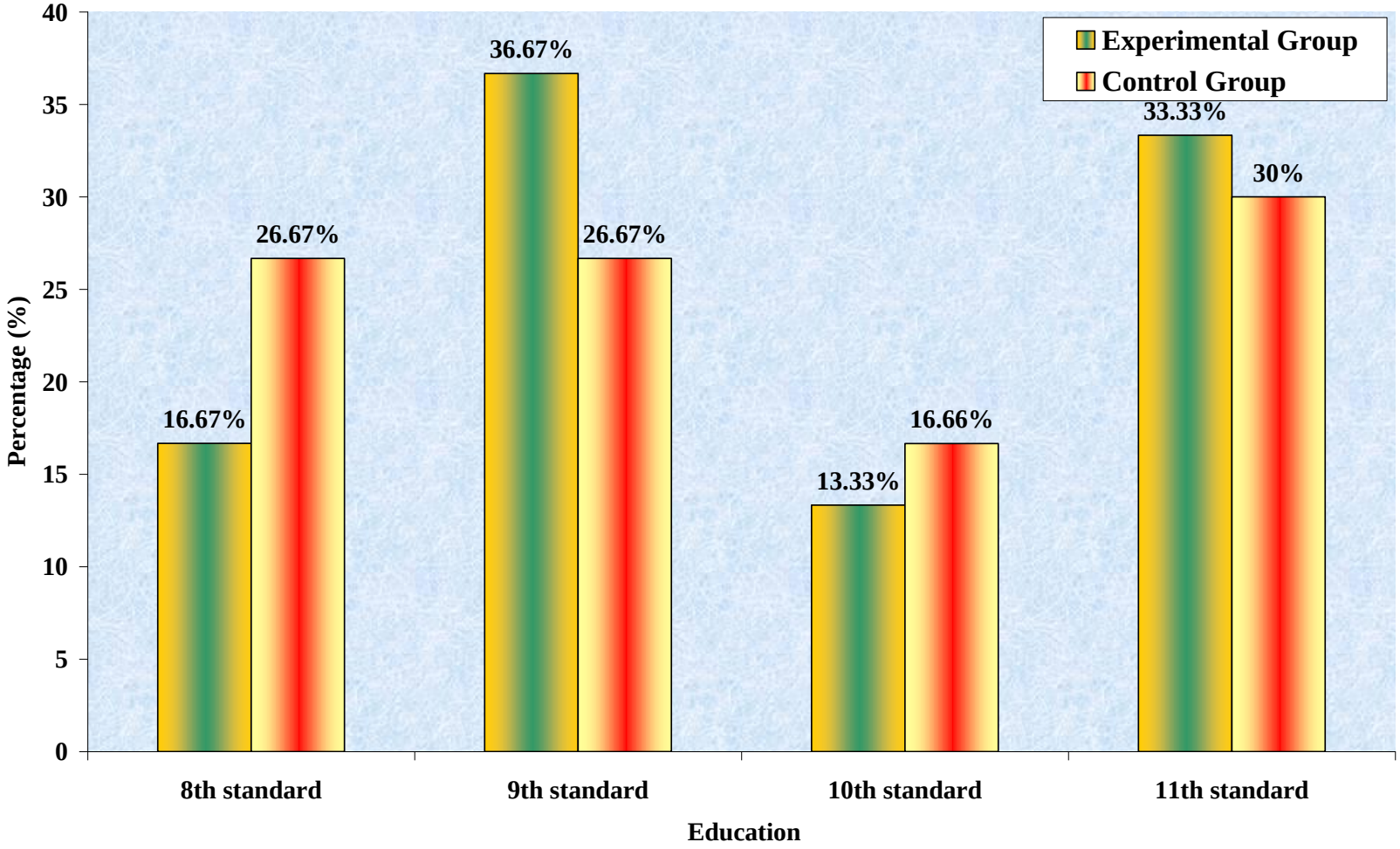

Figure. 7 Graphical Representation of Demographic Variables of Adolescent Girls According to the Education in Both Experimental and Control Group

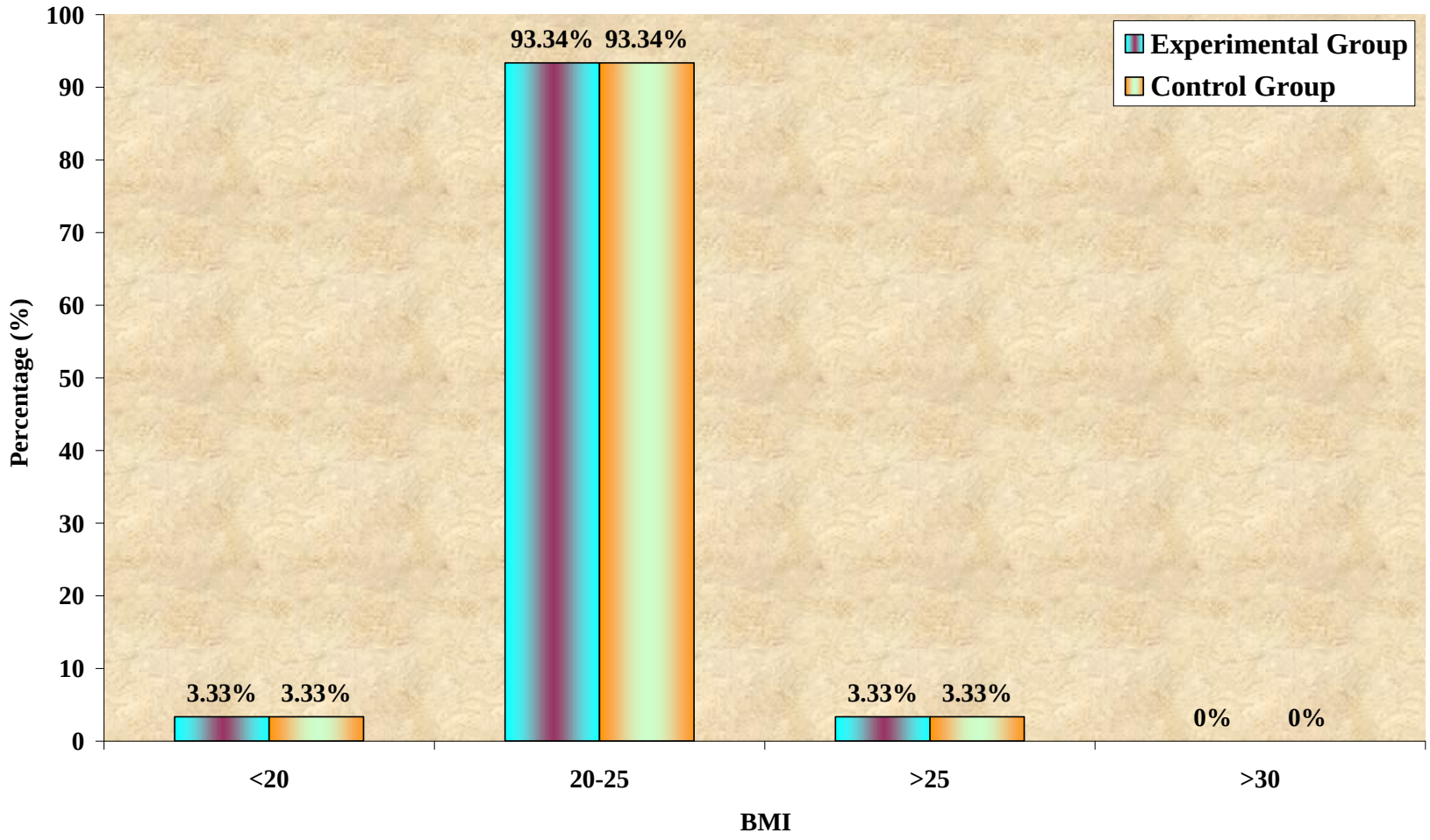

Figure. 8 Graphical Representation of Demographic Variables of Adolescent According to BMI in Both Experimental and Control Group

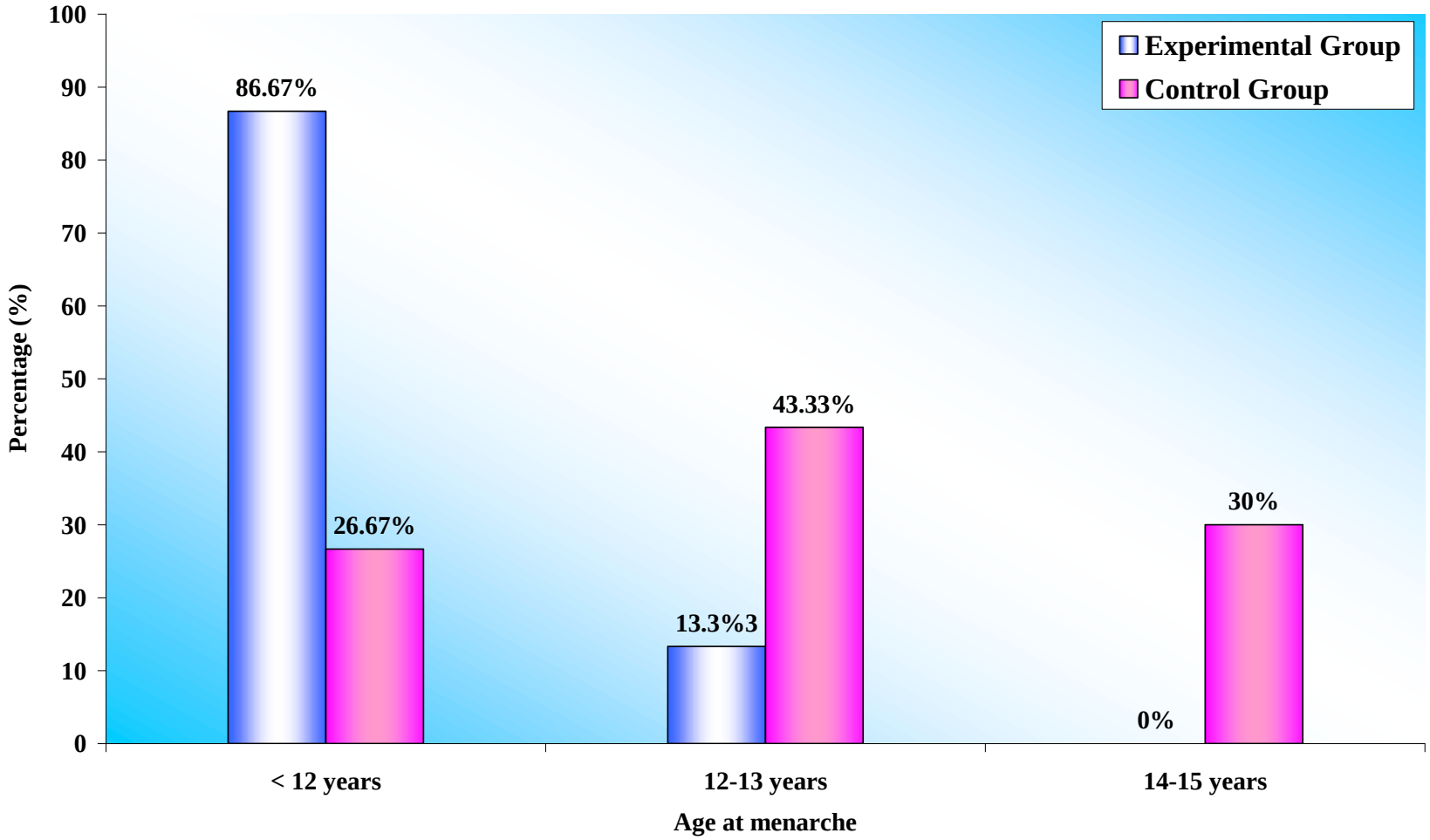

Figure. 9 Graphical Representation of Menstrual Variables of Adolescent Girls According to Age at Menarche in Both Experimental and Control Group

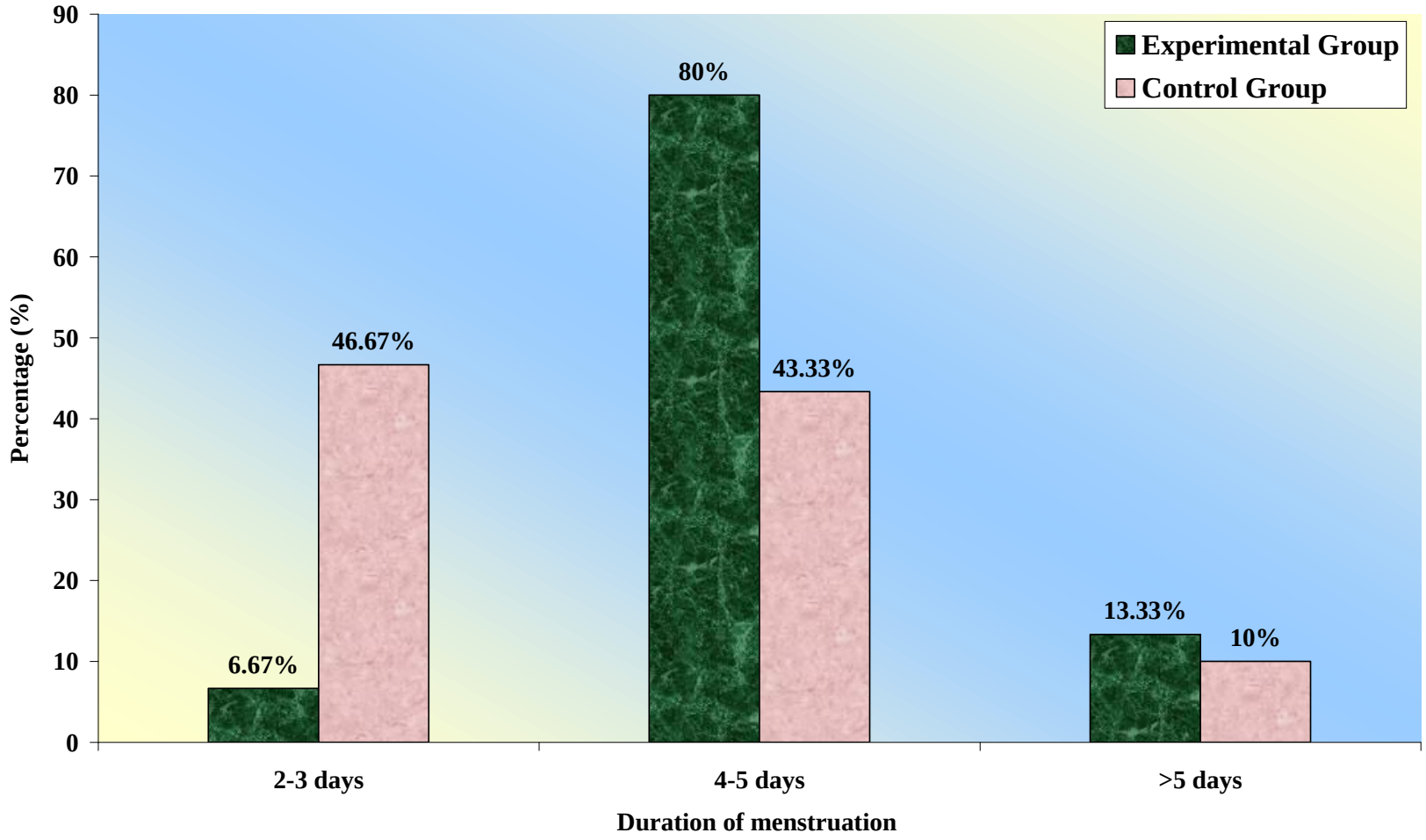

Figure. 10 Graphical Representation of Menstrual Variables of Adolescent Girls According to Duration of Menstruation in Both Experimental and Control Group

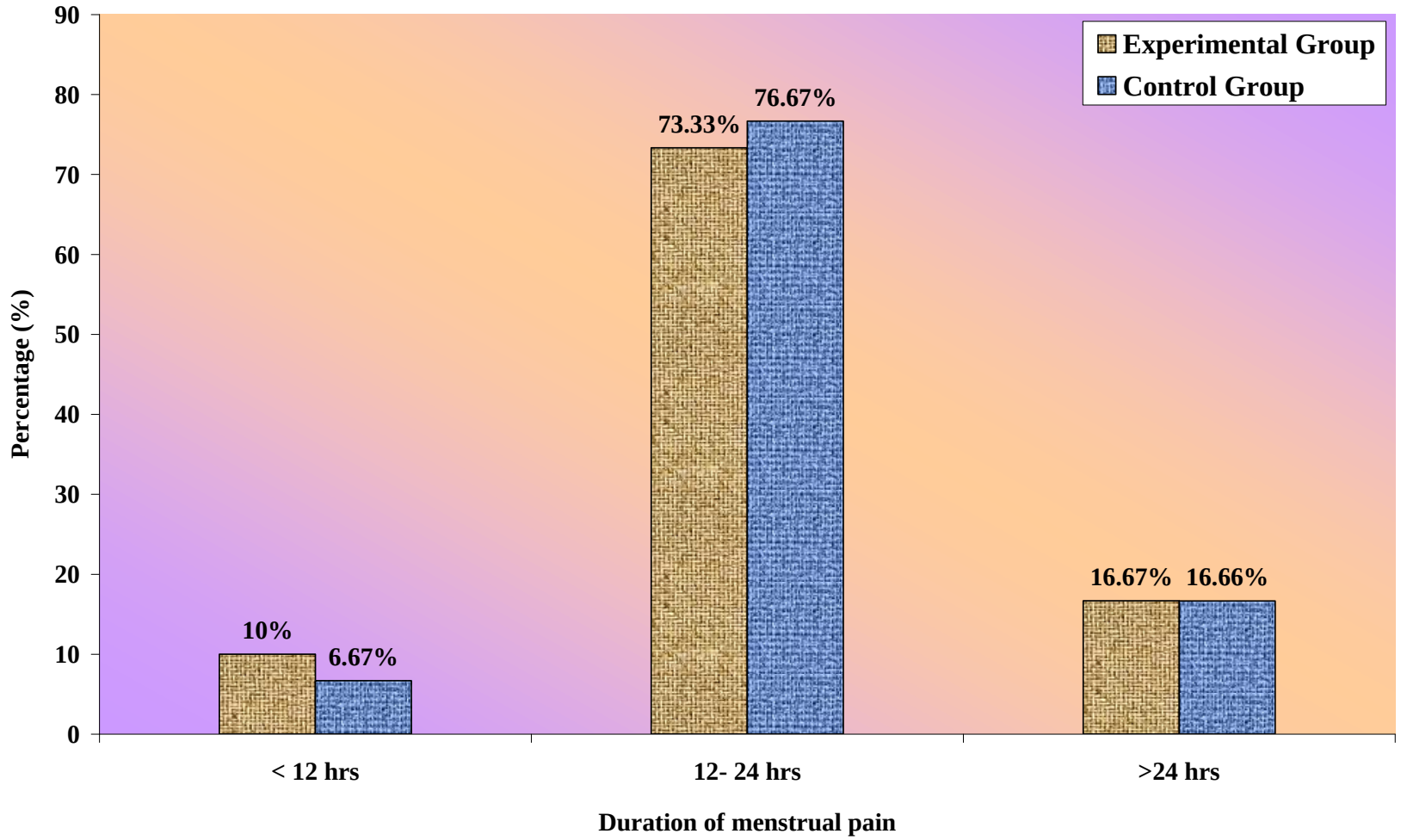

Figure. 11 Graphical Representation of Menstrual Variables of Adolescent Girls According to the Duration of Menstrual Pain In Both Experimental and Control Group

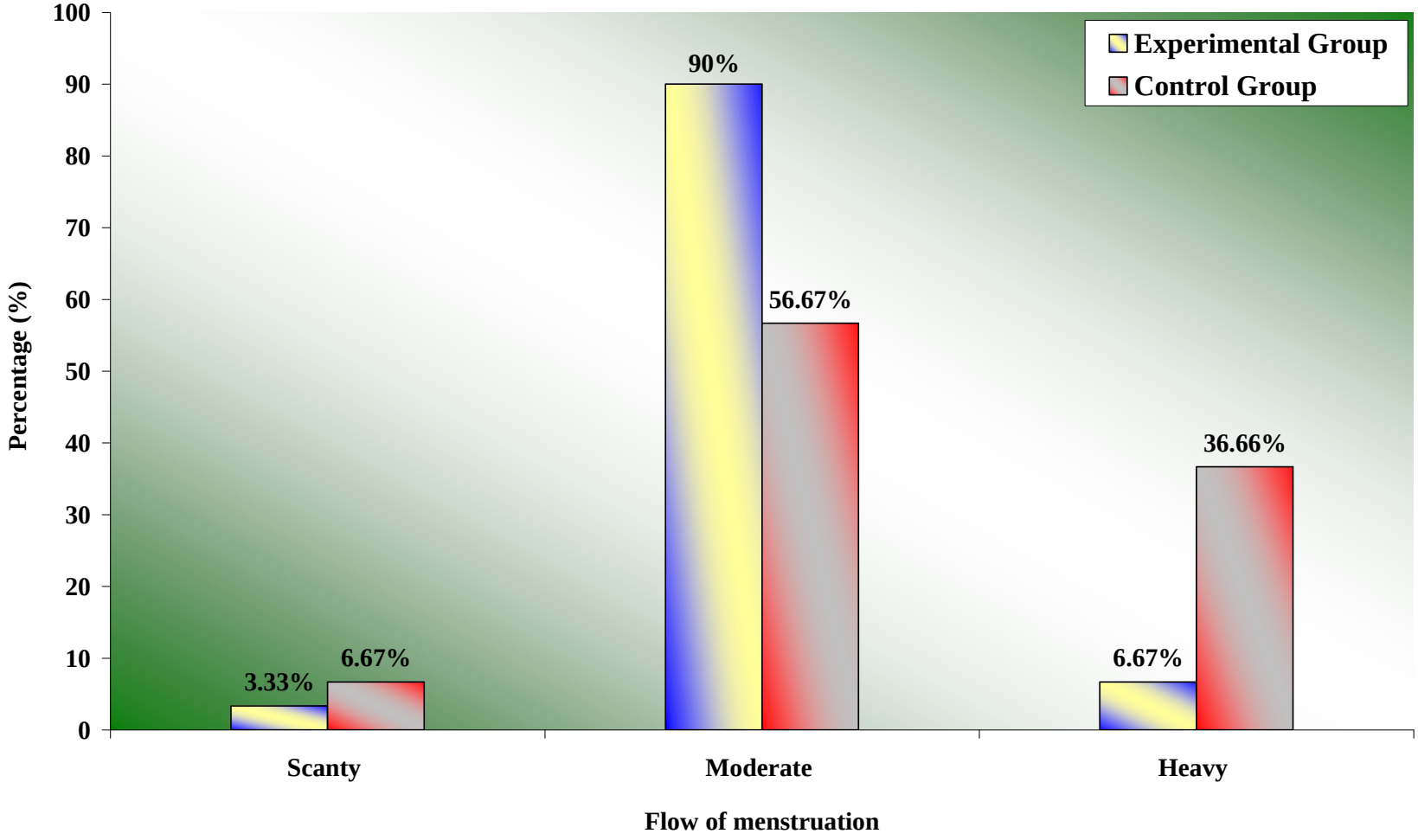

Figure. 12 Graphical Representation of Menstrual Variables of Adolescent Girls According to Flow of Menstruation in Both Experimental and Control Group

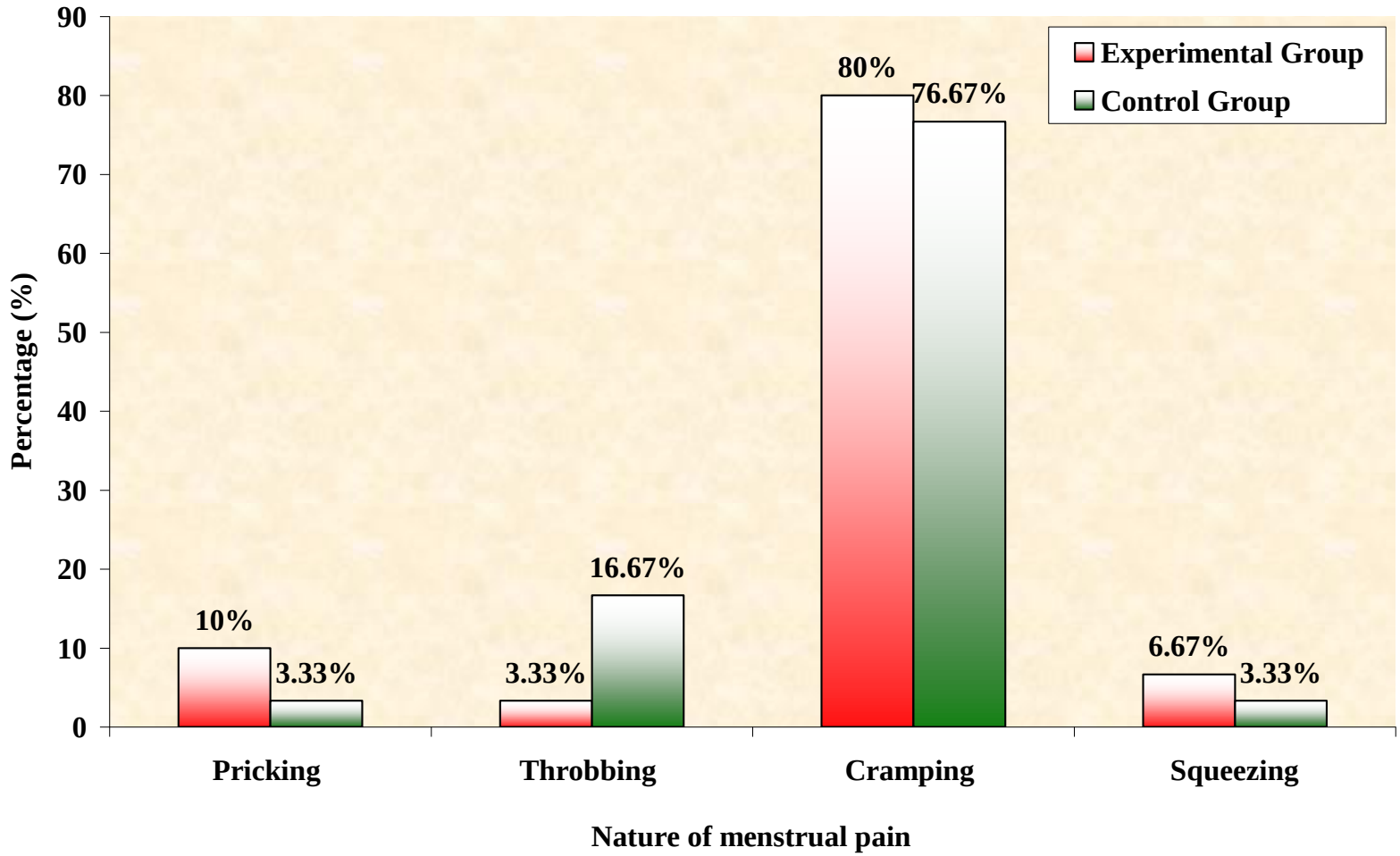

Figure. 13 Graphical Representation of Menstrual Variables of Adolescent Girls According to the Nature of Menstrual Pain in Both Experimental and Control Group

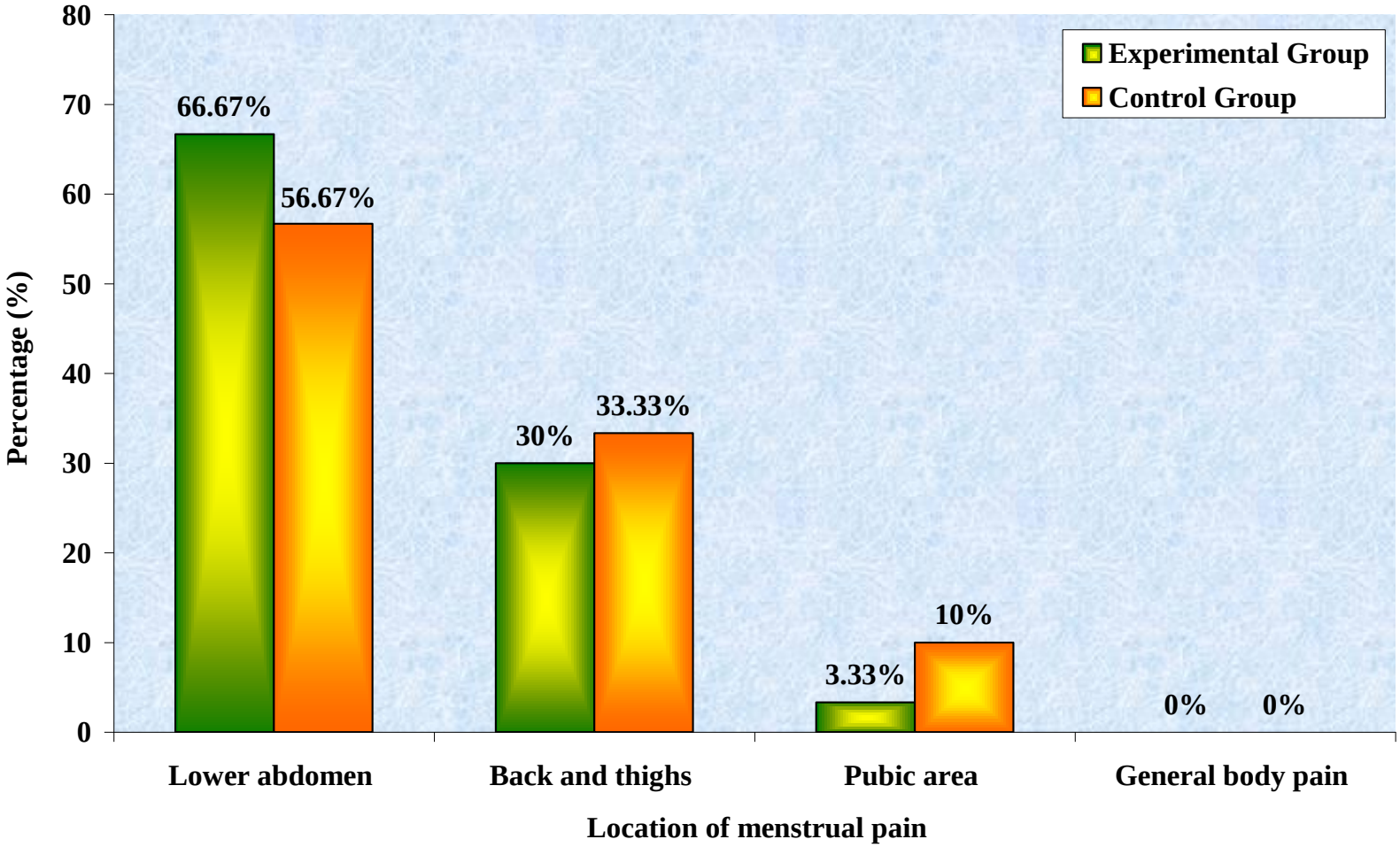

Figure. 14 Graphical Representaion of Menstrual Variables of Adolescent Girls According to the Location of Menstrual Pain in Both Experimental and Control Group

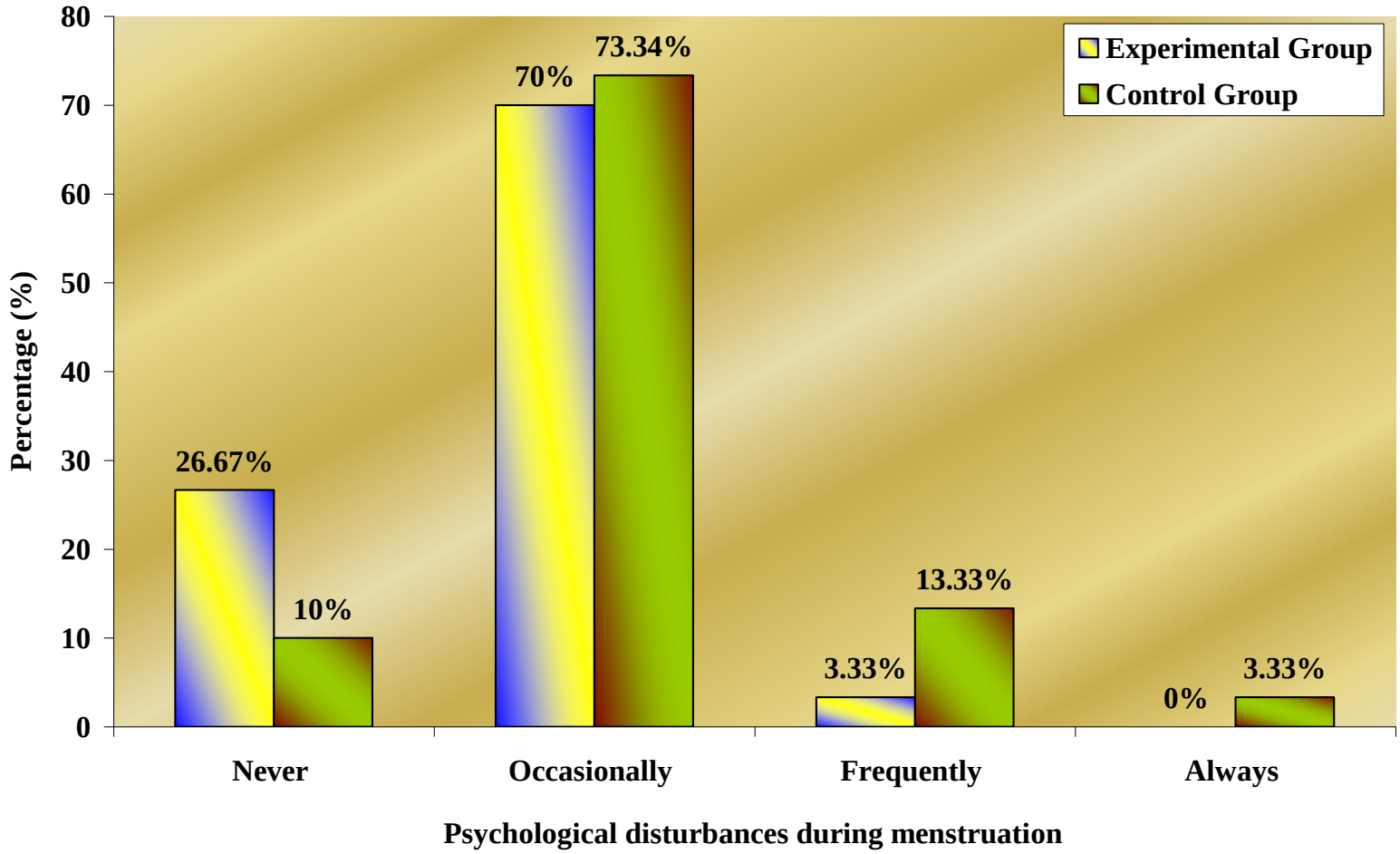

Figure. 15 Graphical Representation of Menstrual Variables of Adolescent Girls According to the Psychological Disturbances During Menstruation in Both Experimental and Control Group

SECTION – II

Table. 2 Distribution of Statistical Value of Pre- Test Score Regarding Menstrual Pain Among Adolescent Girls of Experimental and Control Group at Government Higher Secondary School, Kalapatti, Coimbatore

(N = 60)

S.No.	Pretest Pain Score	Mean	SD	't' value	Level of Significance
1.	Experimental group	5.43	0.615	0.2459	0.05
2.	Control group	5.47	0.6225		

*at significant level

Table 2 shows the mean value of pre- test score of pain during menstruation among adolescent girls in experimental group is 5.43 and control group is 5.47. The calculated 't' value is 0.2459 at 58 degree of freedom and at 0.05% level of significance which is less than the table value(1.98). So it revealed that there was homogeneity between experimental group and control group before providing billig's exercise.

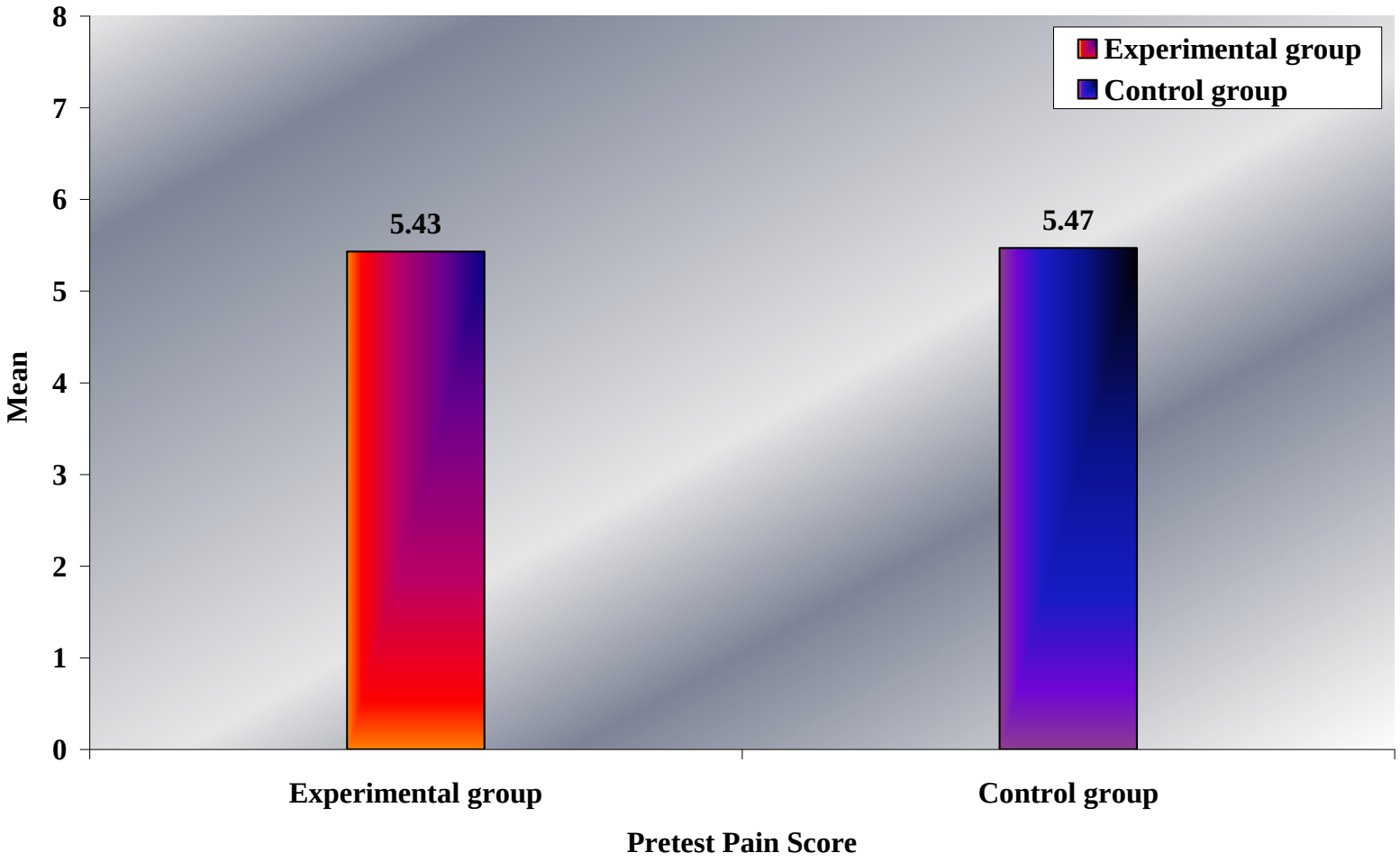

Figure. 16 Graphical Representation of Statistical Value of Pre-test Pain Score Regarding Pain During Menstruation Among Adolescent Girls of Experimental and Control Group

SECTION – III

Table.3 Distribution of Statistical Value of Pre- Test and Post- Test Score Regarding Menstrual Pain Among Adolescent Girls of Experimental Group at Government Higher Secondary School, Kalapatti, Coimbatore

(n = 30)

S.No.	Pain	Mean	SD	't' value	Level of Significance
1.	Pretest	5.43	0.615	22.945*	0.05
2.	Post test	1.33	0.4714		

*at significant level

Table.3 shows that the mean score of pre- test is 5.43 and post test is 1.33. The calculated 't' value is 22.945 at 29 degrees of freedom at 0.05% level of significance, which is greater than that of table value(2.045). It shows that there was a significant difference between pretest and post test score which implied that there was a significant reduction in menstrual pain after providing Billig's exercise.

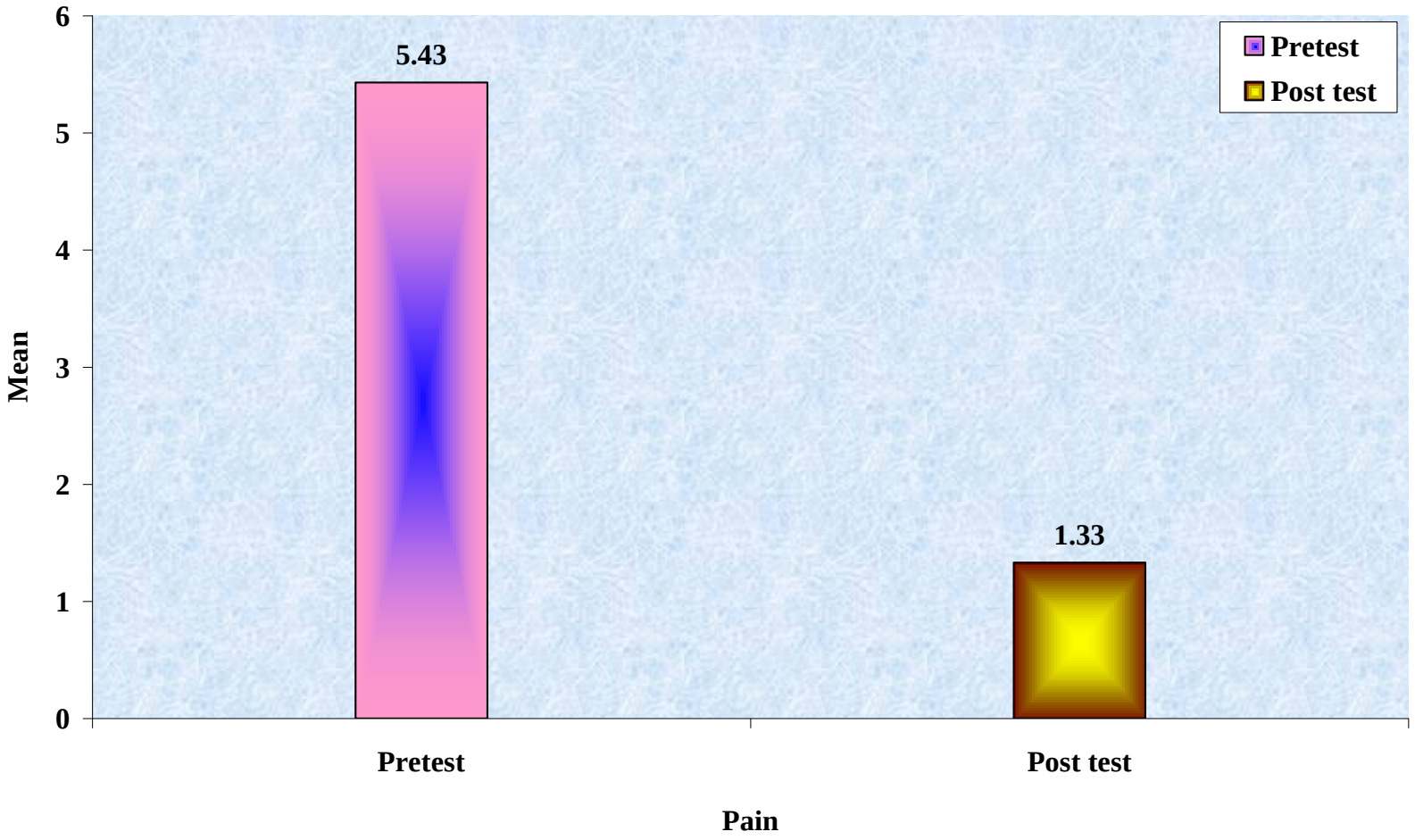

Figure. 17 Graphical Representation of Statistical Value of Pre-test and Post Test Score Regarding Pain During Menstruation Among Adolescent Girls of Experimental Group

SECTION – IV

Table. 4 Distribution of Statistical Value of Pre- Test and Post Test Score Regarding Menstrual Pain Among Adolescent Girls of Control Group at Government Higher Secondary School, Kalapatti, Coimbatore.

(n = 30)

S.No.	Pain	Mean	SD	't' value	Level of Significance
1.	Pretest	5.47	0.6225	2.8640*	0.05
2.	Post test	5.2	0.653		

*at significant level

Table.4 shows the mean score of pre- test of control group is 5.47 and that of post test is 5.2. The calculated 't' value is 2.8640 at 29 degrees of freedom and at 0.05% level of significance, which is greater than the table value (2.045). This shows that, there was a significant difference between pre tests and post pain score among control group, however not an appreciable difference as in case of experimental group with Billig's exercise.

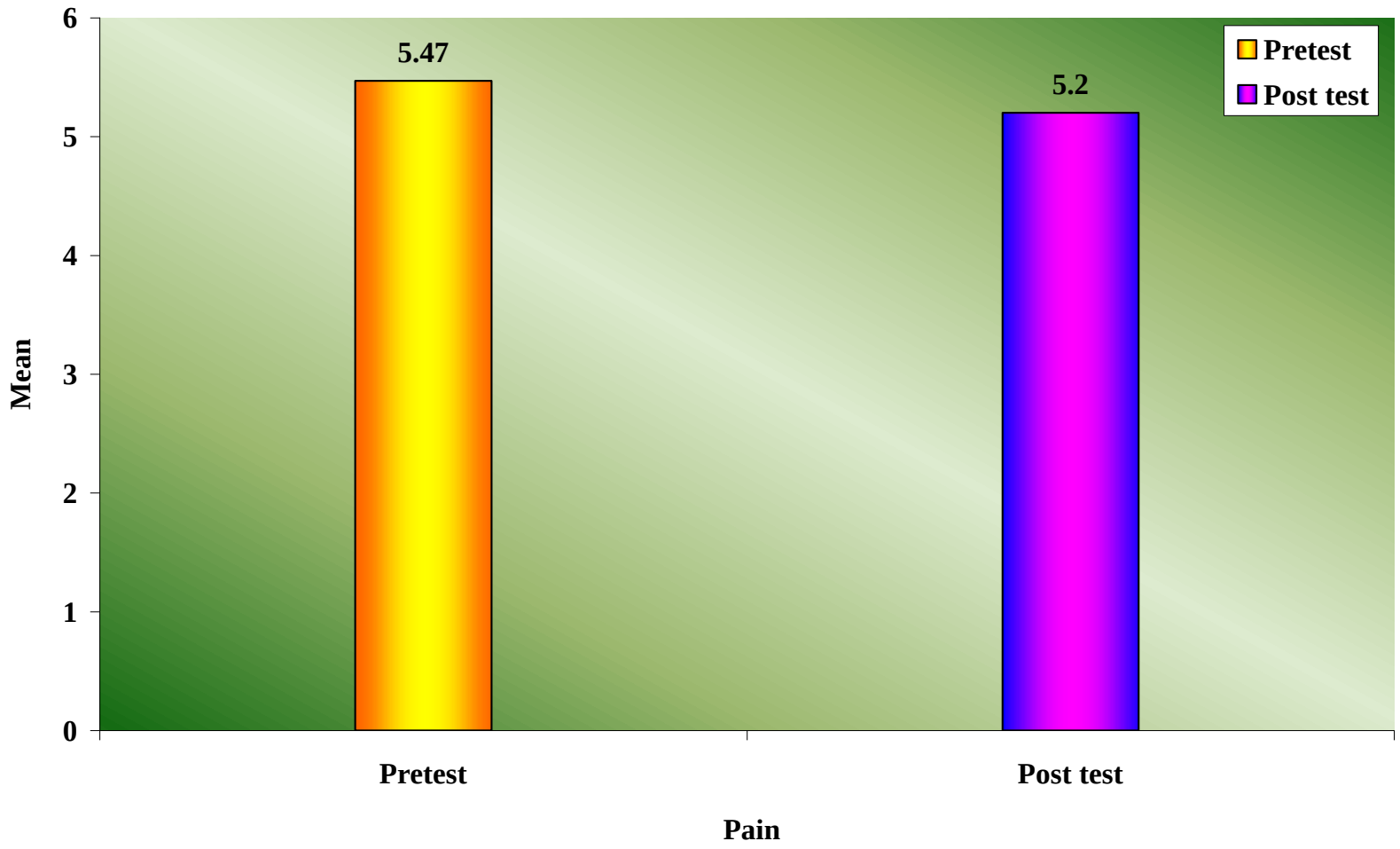

Figure. 18 Graphical Representation of Statistical Value of Pre-test and post test Score Regarding Pain During Menstruation Among Adolescent Girls of Control Group

SECTION – V

Table. 5 Distribution of Statistical Value of Post Test Score Regarding Menstrual Pain Among Adolescent Girls of Experimental and Control Group at Government Higher Secondary School, Kalapatti, Coimbatore.

(N = 60)

S.No.	Post test Pain Score	Mean	SD	't' value	Level of Significance
1.	Experimental group	1.33	0.4714	25.8728*	0.05
2.	Control group	5.2	0.653		

*at significant level

Table 5 shows that the mean value post test pain assessment during menstruation in experimental group was 1.33 and that of control group was 5.2. The calculated 't' value was 25.8728 at 58 degree of freedom and at 0.05% level of significance which is greater than table value (1.98). It shows that the pain score of experimental group was reduced after providing Billig's exercise. Hence alternative hypothesis is accepted.

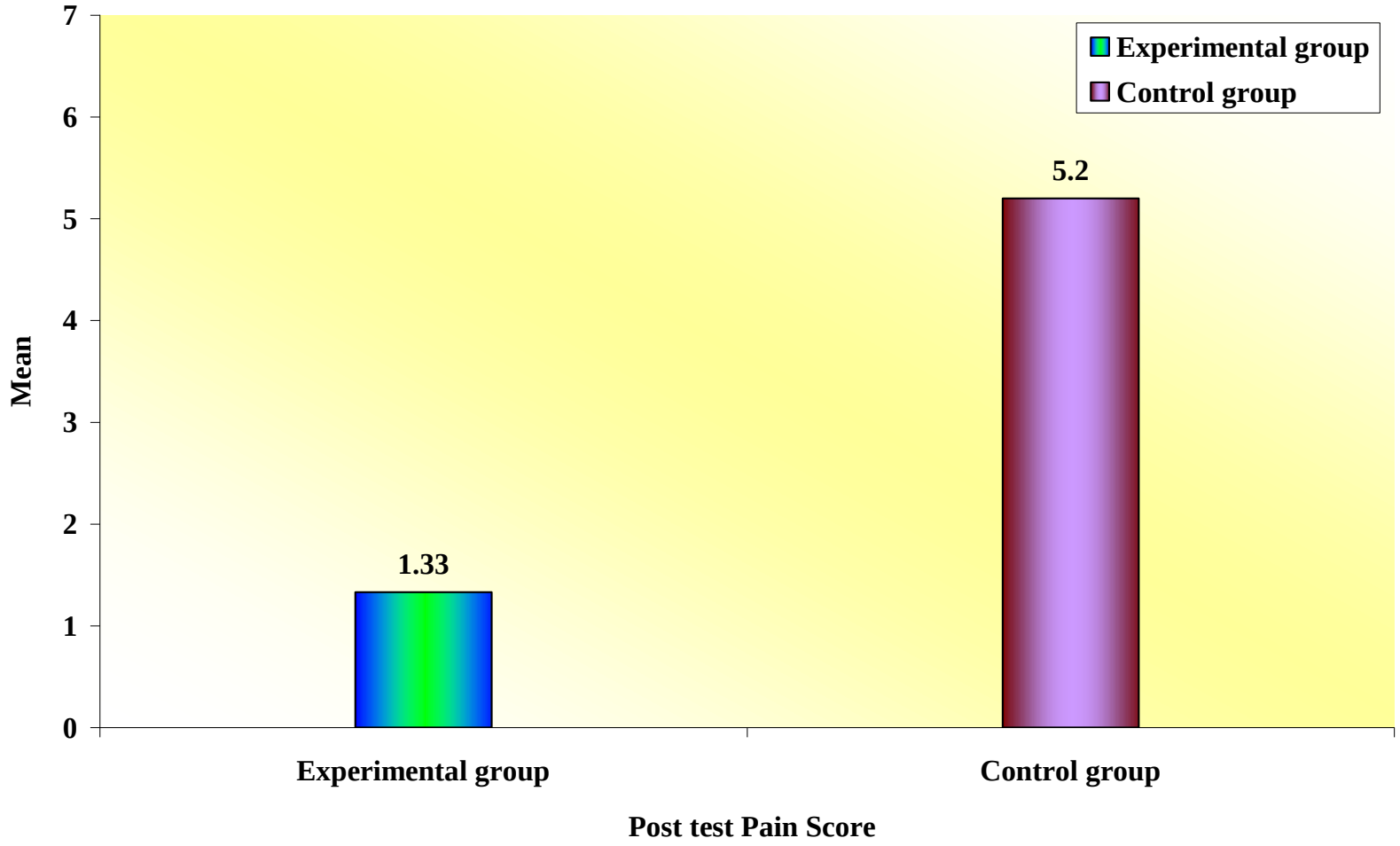

Figure. 19 Graphical Representation of Statistical Value of Post Test Pain Score Regarding Pain During Menstruation Among Adolescent Girls of Both Experimental and Control Group

SECTION – VI

Table. 6 Association of Selected Demographic Variables with Post Test Score Regarding Menstrual Pain Among Adolescent Girls at Government Higher Secondary School Kalapatti, Coimbatore

(N = 60)

S.No.	Demographic Variables	Above Mean	Below Mean	Degree of Freedom	χ^2
1.	**Age of the student**				
	a) 12-14 years	8	10	1	0.552
	b) 15-16 years	7	5	1	
2.	**Education**				
	a) 8th standard	3	2	3	
	b) 9th standard	4	7	3	2.018
	c) 10th standard	3	1	3	
	d) 11th standard	5	5	3	
3.	**Religion**				
	a) Hindu	10	9	2	
	b) Christian	1	2	2	0.384
	c) Muslim	4	4	2	
4.	**BMI**				
	a) < 20 (under weight)	0	1	3	
	b) 20-25 (optimal weight)	14	14	3	2
	c) > 25 (over weight)	1	0	3	
	d) > 30 (obese)	0	0	3	
5.	**Age at menarche**				
	a) < 12 years	12	14	2	
	b) 12-13 years	3	1	2	1.152
	c) 14-15 years	0	0	2	

(Table 6 continues)

(Table 6 continued)

S.No.	Demographic Variables	Above Mean	Below Mean	Degree of Freedom	χ^2
6.	**Duration of menstruation**				
	a) 2-3 days	0	2	2	
	b) 4-5 days	14	10	2	3.666
	c) >5 days	1	3	2	
7.	**Frequency of menstruation**				
	a) Once in 28 days	7	5	2	
	b) Once in 29-30 days	8	7	2	3.398
	c) Once in 31-35 days	0	3	2	
8.	**Duration of menstrual pain**				
	a) < 12 hrs	1	2	2	
	b) 12- 24 hrs	10	12	2	2.312
	c) > 24 hrs	4	1	2	
9.	**Flow of menstruation**				
	a) Scanty	0	1	2	
	b) Moderate	14	13	2	1.036
	c) Heavy	1	1	2	
10.	**Nature of menstrual pain**				
	a) Pricking	1	2	3	
	b) Throbbing	0	1	3	3.998
	c) Cramping	14	10	3	
	d) Squeezing	0	2	3	
11	**Location of menstrual pain**				
	a) Lower abdomen	10	10	3	
	b) Back and thighs	4	5	3	1.11
	c) Pubic area	1	0	3	
	d) General body pain	0	0	3	

(Table 6 continues)

(Table 6 continued)

S.No.	Demographic Variables	Above Mean	Below Mean	Degree of Freedom	χ^2
12.	**Associated symptoms during menstruation**				
	a) Nausea	2	1	3	
	b) Vomiting	9	10	3	0.384
	c) Diarrhea	4	4	3	
	d) Giddiness	0	0	3	
13.	**Psychological disturbances during menstruation**				
	a) Never	5	3	3	
	b) Occasionally	10	11	3	1.546
	c) Frequently	0	1	3	
	d) Always	0	0	3	
14.	**Using of medication during menstrual pain**				
	a) Yes	0	0	1	0
	b) No	15	15	1	
15.	**Inference of the study due to menstrual pain**				
	a) Sometimes missed the school	13	11	3	
	b) Regularly missed	0	1	3	1.366
	c) Missed in one day of their period	2	3	3	
	d) Missed on the second day of menstrual period	0	0	3	

Table 6 shows that there is no association of demographic and menstrual variables with post test score on effectiveness of Billig's Exercise in reducing Dysmenorrhoea among Adolescent Girls.

CHAPTER – V

Results and Discussion

The study aimed at assessing the effectiveness of billig's exercise in reducing dysmenorrhea among adolescent girls. The result of the study is based on the statistical analysis. The data were collected with the help of questionnaire and numerical pain intensity scale.

This is two group pretest and posttest quasi experimental study design intended to assess the effectiveness of billig's exercise in reducing menstrual pain among adolescent girls. The result of this study was discussed according to the objective.

The First Objective of the Study was to Assess the Level of Dysmenorrhoea Among Adolescent Girls in the Experimental and Control Group

Self administered numerical pain rating scale was used to assess the menstrual pain among adolescent girls. The mean score pre- test pain level of experimental group was 5.43 and that of control group was 5.47. Independent 't' test was performed to assess whether any significant difference exists in the pretest score of experimental and control group. The obtained 't' value is 0.2459 which is less than the table value. This finding reveals that there is homogeneity exists among adolescent girls with dysmenorrhea.

Krieger. R. I (2010) conducted a study reported that dysmenorrhea is the leading cause of recurrent short term school absenteeism among adolescent girls. The

data from 2699 menarche adolescent girls of 12-17 years drawn from a probability sampling method and was collected and analyzed by bivaraite and multivariate analytic technique and out of them 1611 adolescent girls (59.7%) reported dysmenorrhea and 14% frequently miss school because of menstrual pain. The prevalence of dysmenorrhea was lower at age 17 than at 12 years.

Gelal. A (2009) conducted a study to determine the prevalence and severity of dysmenorrhea among 1826 girls ranged in the age from 13-18years. Questions were asked about general health and about menstruation. 772 girls (53%) responded that they experience pain with their periods. 176(12%) reported discomfort severe enough to necessitate time off work or school. 12% of the total sample reported pain lasting 3 or more days, 36% reported pain 2 or more days.

The Second Objective of the Study was to Administer Billig's Exercise for Adolescent Girls with Menstrual Pain in Experimental Group

After assessing the pain, the billig's exercise was provided one day before the menstruation and first two days of menstruation ,5-6 times at 20 minutes duration to adolescent girls in experimental group and no intervention was given to control group.

Hausen. B. M (2010) conducted an experimental study to assess the effectiveness of mint on menstrual pain among 12 to 18 years of adolescent girls (n=80). Out of 80, 40 were in experimental group and remaining 40 were in control group. Intervention through billig's exercise was given to the experimental group and routine pharmacological management was given to control group. The study reveals that billig's exercise was very effective in reducing menstrual pain than the pharmacological management.

The Third Objective of the Study was to Assess the Effectiveness of Billig's Exercise on Menstrual Pain Among Adolescent Girls in Experimental Group

Numerical pain scale was used to assess the pain level of adolescent girls with dysmenorrhea after taking the billig's exercise. The mean score of post test pain level was 1.33 in the experimental group and 5.2 in the control group and the calculated 't' value was 25.8728.This implies that there was more significant difference in the menstrual pain level after taking billig's exercise among adolescent girls of experimental group.

Suckling. J (2009) conducted a randomized clinical trial study to determine the effect of exercise on primary dysmenorrhea among 150 high school girls in Chennnai city and the result obtained was that the intensity of the pain in the exercise group declined from 8.59 to 4.63 in the third menstrual period and 2. 84 in the fourth menstrual period and 2.84 in the fourth menstrual period .The average of the duration of pain declined from 7.15 to 4.22 in the third menstrual period. In conclusion the exercise can decrease the duration and severity of dysmenorrhea.

The Fourth Objective of the Study is to Compare the Level of Dysmenorrhoea Among Adolescent Girls in the Experimental and Control Group

Dysmenorrhea of adolescent girls was assessed by numerical pain scale and the result shows that the pretest score of experimental group was 5.43 and post test score was 1.33 and the obtained't' value is 22.945. It showed that there was a significant difference exists between the pre-test and post test, it implied that there was a significant reduction in the intensity of pain after providing the billig's exercise.

Morse (2006) commented that approximately 10% of the women were severely affected by dysmenorrhoea during the reproductive years. Relaxation instructions are provided to experimental group and drug treatment were given to control group. The study revealed that experimental group have significant positive benefits from the relaxation technique.

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The Fifth Objective of the Study is to **Associate the Level of Dysmenorrhoea Among Adolescent Girls with Selected Demographic Variables**

Association between level of dysmenorrhea with selected demographic variables was analyzed by using chi – square test. The findings after analysis reveals that the demographic variables like age, religion, education, BMI, age at menarche,duration of menstruation, frequency of menstruation, duration of menstrual pain, flow of menstruation, nature of menstrual pain, absenteeism in school showed no significant association with pain score during menstruation.

Steven (2009) conducted a study to assess the effect of billig's exercise on dysmenorrhea among adolescent girls. 70 adolescent girls were selected for the study by random sampling method. The results found that the variables such as age of the adolescent girls, duration of menstrual flow and body mass index had no significant association with the pain score.

CHAPTER – VI

Summary, Conclusion, Nursing Implications, Limitation and Recommendations

Summary

Dysmenorrhea is the term for describing painful menstrual cramps. It is a common gynecological problem that can affect as many as 60% of adolescent girls, and 15% of these girls suffer severely enough to temporarily render them incapacitated which, results in absences from work or school. The impacts are significant both in terms of quality of life and global economy. The over production of uterine prostaglandins as a substantial contributing factor to the painful cramps that are the major symptom of dysmenorrhea.

The present study was to find out the effectiveness of Billigs exercise in reducing dysmenorrhea among adolescent girls at Govt. Higher Secondary School, Kalapatti, Coimbatore.

The Following Objectives were Set for the Study

- To assess the level of dysmenorrhoea among adolescent girls in the experimental and control group.
- To administer Billig's exercise for adolescent girls with menstrual pain in experimental group.
- To assess the effectiveness of Billig's exercise on menstrual pain among adolescent girls in experimental group.

- To compare the level of dysmenorrhoea among adolescent girls in the experimental and control group.
- To associate the level of dysmenorrhoea among adolescent girls with selected demographic variables.

The Alternative Hypothesis Set for the Study

There is significant difference between pretest and post test pain level after administering Billig's exercise among adolescent girls with dysmenorrhea. So there will be a significant effect of Billig's exercise in reduction of pain during menstruation.

Major Findings of the Study are as Follows

- The pre-test pain mean score of Experimental group was 5.43.
- The post test pain mean score of Experimental group was 1.33.
- The obtained 't' value of pain of Experimental group was 22.945.
- The pre-test mean pain score of control group was 5.47.
- The post test mean score of control group was 5.2.
- The obtained 't' value of pain of Control group was 2.8640.
- The obtained 't' value for comparison of pre-test pain score was 0.2459.
- The obtained 't' value for comparison of Post test pain score was 25.8728.

Conclusions

- The study shows significant effectiveness of Billig's exercise in reducing pain during menstruation among adolescent girls in experimental group.
- This study shows that the Billig's exercise is more effective in reducing pain during menstruation among adolescent girls than pharmacological management.

Nursing Implications

The finding of the study has implications in various areas of nursing practices, nursing education, nursing administration and nursing research.

Nursing Practice

- If the nurse has knowledge regarding complementary therapies, she can teach this to the patient's so that they will get knowledge on non invasive, non pharmacological treatment without side effects.
- Nurse can improve the comfort level of the patient.
- It does not require additional equipment, articles, place or extra precautions.

Nursing Education

- Nursing curriculum is a means through which future nurses are prepared.
- The nursing curriculum should be updated with the inclusion of topics on complementary and alternative therapies.
- Dysmenorrhea is the major cause for withdrawl from daily activities and absenteeism in school.
- Periodic conferences, seminars, symposium can be arranged regarding alternative and complementary therapies to make the nursing professionals competent enough to meet ever changing needs of the society.

Nursing Administration

- The nursing administrators should organize in-service education programme for nurses about the importance of complementary and alternative therapies in nursing practice.

Nursing Research

- Nursing researchers should be aware of the new trends and existing health care system.
- The present study can be used as a motivation for nurses to conduct research in future in comparing different and other alternative therapies to reduce pain during menstruation.

Limitations

- The age group of students limited to 12-16 years and is limited to only one school.
- The study was limited to one month period.

Recommendations

- Similar study can be conducted for a large group on a long term basis.
- Comparative study can be conducted by using various other complementary and alternative therapies to find out the effectiveness in reducing menstrual pain.
- Comparative study can be conducted between Billig's exercise and pharmacological treatment.

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ABSTRACT

Statement of the Problem: A study to assess the effectiveness of Billig's exercise in reducing dysmenorrhea among adolescent girls at Government Higher Secondary School, Kalapatti, Coimbatore. **Study Objectives**: (a) To assess the level of dysmenorrhoea among adolescent girls in the experimental and control group. (b) To administer Billig's exercise for adolescent girls with menstrual pain in experimental group. (c) To assess the effectiveness of Bulig's exercise on menstrual pain among adolescent girls in experimental group. (d) To compare the level of dysmenorrhoea among adolescent girls in the experimental and control group. (e) To associate the level of dysmenorrhoea among adolescent girls with selected demographic variables. **Methodology** : experimental approach, a subtype of quantitative approach, two group pretest and posttest quasi experimental design was used for the present study. The sample for the study consists of 60 adolescent girls with dysmenorrhea, 30 in experimental group and 30 in control group, selected by purposive sampling techniques, a type of non probability sampling method. Numerical Pain Intensity Scale was used to assess the level of menstrual pain of adolescent girls in both groups. **Results** : Inferential and descriptive statistics were used to analyze the data. The pretest value of menstrual pain in adolescent girls for experimental and control group was 5.43 and 5.47 respectively.the mean post test score was 1.33and 5.2 for the experimental and control group. The comparison was done between two groups by performing the independent 't' test and the value was 25.8728. **Conclusion** : The study shows that the Billig's exercise is effective to reduce menstrual pain among adolescent girls

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To

The Managing Director,
Ashwin Hospital,
Coimbatore.

Through

The Principal,
PPG College of Nursing
Coimbatore – 35.

Respected Sir,

Sub : Seeking permission for conducting research study

I am a student of M.Sc Nursing in PPG College of Nursing. Our college is affiliated to the Tamilnadu Dr. M. G. R Medical University, Chennai. I have taken the specialization in Obstetrics and Gynecological Nursing.

Topic : A STUDY TO ASSESS THE EFFECTIVENESS OF BILLIG'S EXERCISE IN REDUCING DYSMENORRHEA AMONG ADOLESCENT GIRLS AT GOVERNMENT HIGHER SECONDARY SCHOOL, KALAPATTI, COIMBATORE

I request you to kindly permit me to conduct my study in your institutions. Hope you will consider my requisition and do the needful.

Thanking you,

Yours sincerely,

Date :

Place : Coimbatore

Requisition Letter for Content Validity

From

M.Sc (N) II Year,
PPG College of Nursing,
Coimbatore – 35.

To

Through : Principal, PPG College of Nursing

Respected Sir/Madam,

Sub : Requisition for expert opinion and suggestion for content validity of tool

I am a student of M.Sc (N) II year, PPG College of Nursing affiliated to the Tamilnadu Dr. M. G. R. Medical University, Chennai. As a partial fulfillment of the M.Sc (N) programme. I am conducting

A STUDY TO ASSESS THE EFFECTIVENESS OF BILLIG'S EXERCISE IN REDUCING DYSMENORRHEA AMONG ADOLESCENT GIRLS AT GOVERNMENT HIGHER SECONDARY SCHOOL, KALAPATTI, COIMBATORE

Herewith I have enclosed the developed tool for content validity and for the expert opinion and possible solution. It would be very kind of you to return the same as early as possible.

Thanking you,

Yours faithfully,

PPG College of Nursing

Format for the Content Validity

Name of the expert :

Address :

Total content for the tool :

Kindly validate each tool and tick wherever applicable

S.No	No. of Tool/Section	Strongly Agree	Agree	O.K	Not Applicable	Need Modification	Remarks

Remarks

Signature of the Expert with Date

LIST OF EXPERTS

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   Coimbatore.

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3. **Prof. CHARMINI JEBAPRIYA, M.Sc (N).,**

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   Coimbatore.

4. **Prof. ESTHER JOHN, M.Sc (N).,**

   Principal

   Ganga College of Nursing

   Coimbatore.

5. **Prof. V. KAVITHA, M.Sc (N).,**

   Professor

   Sri Ramakrishna College of Nursing

   Coimbatore.

PART - A

Demographic Variables

Instruction

Read every statement carefully and indicate the response that you choose by placing a tick (✓) in the appropriate space given.

Sample No. : _____

1. Age of the student
    a) 12-14 years ☐
    b) 15-16 years ☐

2. Education
    a) 8th standard ☐
    b) 9th standard ☐
    c) c.10th standard ☐
    d) d. 11th standard ☐

3. Religion
    a) Hindu ☐
    b) Muslim ☐
    c) Christian ☐

4. Body mass Index (Quetilet's Index)
    a) < 20 (underweight) ☐
    b) 20- 25 (optimal weight) ☐
    c) >25 (over weight) ☐
    d) > 30 (obese) ☐

Menstrual Variables

Instruction

Read every statement carefully and indicate the response that you choose by placing a tick (✓) in the appropriate space given.

1. Age at menarche
    a) <12 years ☐
    b) 12-13 years ☐
    c) 14- 15 years ☐

2. Duration of menstruation
    a) 2- 3 days ☐
    b) 4-5 days ☐
    c) >5 days ☐

3. Frequency of menstruation
    a) Once in 28 days ☐
    b) Once in29-30 days ☐
    c) Once in 31-35 days ☐

4. Duration of menstrual pain
    a) < 12 hrs ☐
    b) 12-24 hrs ☐
    c) > 24 hrs ☐

5. Flow of menstruation

    a) Scanty ☐

    b) Moderate ☐

    c) Heavy ☐

6. Nature of menstrual pain

    a) Pricking ☐

    b) Throbbing ☐

    c) Cramping ☐

    d) Squeezing ☐

7. Location of menstrual pain

    a) Lower abdomen ☐

    b) Back and thighs ☐

    c) Pubic area ☐

    d) General body pain ☐

8. Associated symptoms during menstruation

    a) Nausea ☐

    b) Vomiting ☐

    c) Diarrhea ☐

    d) Giddiness ☐

9. Psychological disturbances (anger or irritation) during menstruation

    a) Never ☐

    b) Occasionally ☐

    c) Frequently ☐

    d) Always ☐

10. Using of medication during menstrual pain

a) Yes ☐

b) No ☐

11. Inference of study due to menstruation

a) Sometimes missed the school ☐

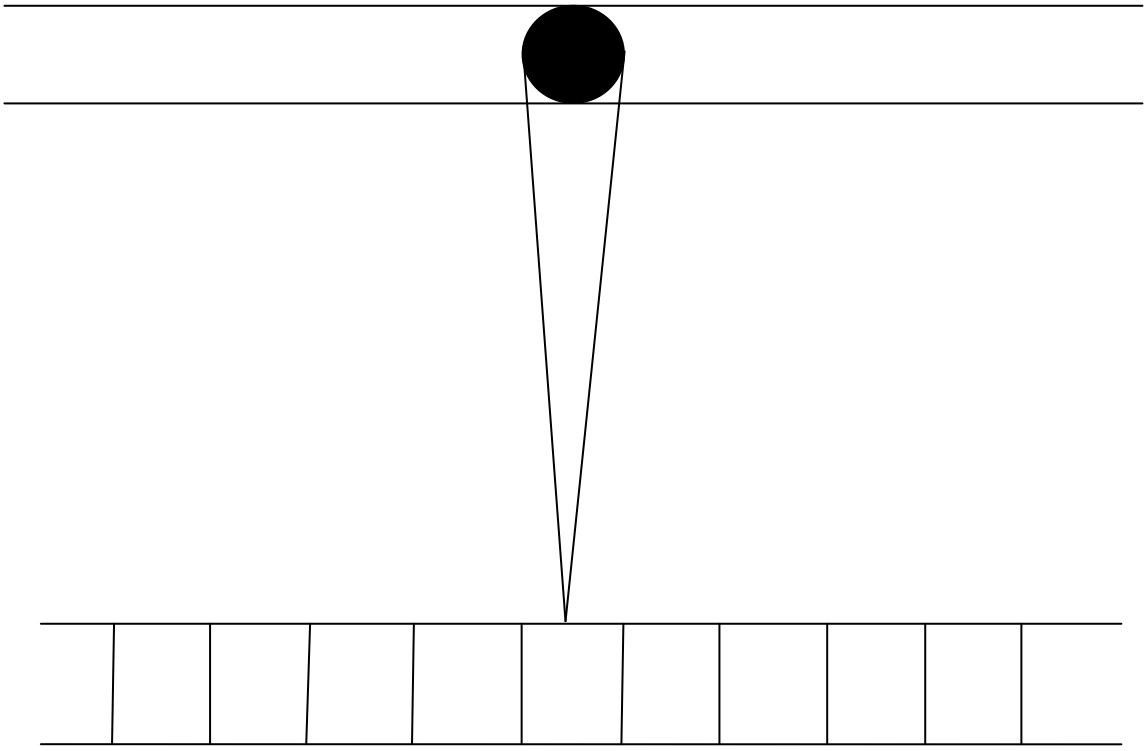
b) Regularly missed the schools ☐

c) Missed on the first day of their period ☐

d) Missed on the first 2 days of their period ☐

PART - B

Numerical Pain Intensity Scale



Description

0	: None
1-3	: Mild pain
4-7	: Moderate pain
> 7	: Severe pain

பிரிவு -அ

மக்கள் தொகை மாறிலிகளின் முறையான நேர்காணல் படிவம்

கீழ் கண்ட வினாக்களுக்கு ஏதேனும் ஒன்றை மட்டும் (✓) இவ்வாறு விடை அளிக்கவும்

1. வயது

    அ) 12-14 ☐

    ஆ) 15-16 ☐

2. கல்வி தகுதி

    அ) 8-ஆம் வகுப்பு ☐

    ஆ) 9-ஆம் வகுப்பு ☐

    இ) 10-ஆம் வகுப்பு ☐

    ஈ) 11-ஆம் வகுப்பு ☐

3. மதம்

    அ) இந்து ☐

    ஆ) கிறிஸ்தவம் ☐

    இ) இஸ்லாமியர் ☐

4. உடல் பருமன் குறியீடு

    அ) <20(குறைந்த எடை) ☐

    ஆ) 20-25(சராசரி எடை) ☐

    இ) >25(அதிக எடை) ☐

    ஈ) >30(உடல் பருமன்) ☐

மாதவிடாய் மாறிலிகள்

1. பூப்படைந்த வயது

    அ) <12 வயது ☐

    ஆ) 12-13 வயது ☐

    இ) 14-15 வயது ☐

2. மாதவிலக்கு ஏற்படும் நாட்கள்

    அ) 2-3நாட்கள் ☐

    ஆ) 4-5 நாட்கள் ☐

    இ) >5நாட்கள் ☐

3. எவ்வளவு நாட்களுக்கு ஒரு முறை மாதவிலக்கு ஏற்படும்

    அ) 28நாட்களுக்கு ஒரு முறை ☐

    ஆ) 29-30 நாட்களுக்கு ஒரு முறை ☐

    இ) 31-35 நாட்களுக்கு ஒரு முறை ☐

4. மாதவிடாய் வலி இருக்கும் நேரம்

    அ) <12 வரை ☐

    ஆ) 12-14 வரை ☐

    இ) >24 வரை ☐

5. மாதவிடாய் வெளியேறும் அளவு

    அ) குறைந்த அளவு ☐

    ஆ) சராசரி அளவு ☐

    இ) அதிகமான அளவு ☐

6. மாதவிடாய் வலியின் தன்மை

அ) ஊசிகுத்துவது போன்ற வலி ☐

ஆ) துடிப்புடன் கூடிய வலி ☐

இ) தசைபிடிப்புடன் கூடிய வலி ☐

ஈ) அழுத்துவது போன்ற வலி ☐

7. மாதவிடாயின் போது வலி ஏற்படும் பகுதிகள்

அ) அடிவயிறு ☐

ஆ) பின்பகுதி மற்றும் தொடை பகுதி ☐

இ) பிறப்புறுப்பு ☐

ஈ) பொதுவான உடல் வலி ☐

8. மாதவிடாயின் போது வலி ஏற்படும் அறிகுறிகள்

அ) வாந்தி உணர்வு ☐

ஆ) வாந்தி ☐

இ) வயிற்று போக்கு ☐

ஈ) மயக்கம் ☐

9. மாதவிடாயின் போது மன மாற்றங்கள் இருக்குமா?

அ) இல்லை ☐

ஆ) இருக்கலாம் ☐

இ) அடிக்கடி ☐

ஈ) எப்போதும் ☐

10. மாதவிடாயின் போது மருந்துகள் எடுக்கிறீர்களா?

அ) ஆம் ☐

ஆ) இல்லை ☐

11. மாதவிடாயின் போது கல்வி பாதிக்கபடுமா?

அ) சில நேரங்களில் பள்ளிக்கு போகாமல் இருத்தல் ☐

ஆ) எப்போதும் பள்ளிக்கு போகாமல் இருத்தல் ☐

இ) மாதவிடாயின் முதல் நாளில் பள்ளிக்கு போகாமல் இருத்தல் ☐

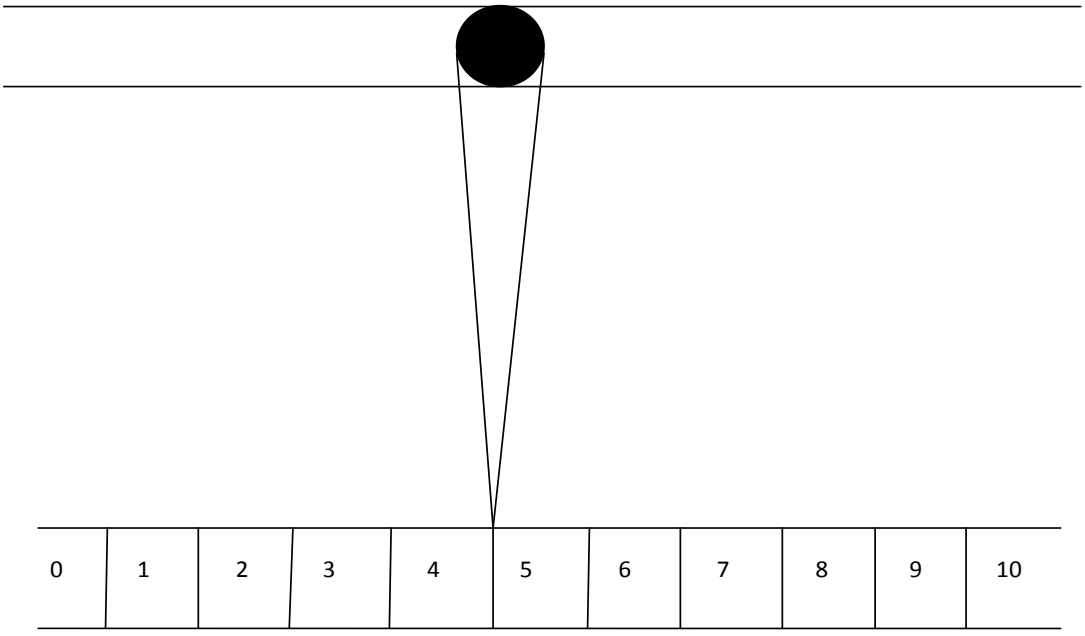
ஈ) மாதவிடாயின் இரண்டாம் நாளில் பள்ளிக்கு போகாமல் இருத்தல் ☐

பிரிவு - ஆ

வலி மதிப்பீட்டிற்கான பார்வை அளவுகோல்

குறிப்பு

கீழே கொடுக்கப்பட்டுள்ள அளவீட்டில் 0முதல்10வரை உள்ளது. உங்கள் வலியின் திவிர தன்மைக்கேற்ப சுட்டிக்காட்டவும்



மதிப்பெண்கள்

0 : வலி இல்லை

1-3 : குறைந்த அளவு வலி

4-7 : மிதமான வலி

> 7 : அதிகபட்சமான வலி

PROTOCOL

BILLIG'S EXERCISE

Introduction

Menstruation is monthly bleeding from the uterus which occurs for 4-5 days every 28 days during the reproductive life of women, with an average blood loss of about 20- 60 ml of blood. It is often associated with problems of irregular menstruation, excessive bleeding and dysmenorrhoea. Of these dysmenorrhoea is one of the common problems experienced by many adolescent girls.

Dysmenorrhoea is defined as a painful menstruation caused by natural chemicals called prostaglandins. Pain usually occurs right before menstruation starts, as the level of prostaglandins increases in the lining of uterus. On the first day of menstrual period, the prostaglandin levels are high. Pain usually decreases as the level of prostaglandins decrease. So the pain can be experienced few days before the periods starts and lasts for 1-2 days of period.

Dysmenorrhoea is of two types. Primary dysmenorrhoea and secondary dysmenorrhoea. Of this primary dysmenorrhoea occurs in young females with no pelvic pathology. It often begins with the onset of ovulatory cycles six months to one year after the menarche.

Billig's one of the first advocates of exercises for dysmenorrhoea, in 1943. When a women with dysmenorrhoea has a contracted ligamentous bands in the abdomen, while exercising subsequently developed a series of stretching in the

abdomen and pelvic muscles, which claimed a high rate of symptom relief. Billig's exercises is pelvic tilt along with tightening of buttocks and muscles of abdomen followed by relaxation. This exercise was beneficial continued to enjoy widespread acceptance. It has been proven to be safe by the WHO and the US National Institute of Health (NIH) among other reputed research institutions.

Benefits of Exercises

- It helps to improve physical strength and stamina.
- It improves blood circulation and reduce pain.
- It also reduces psychological stress.

Any type of exercises can be practice in our daily life, such as simple running, skipping, walking and breathing exercise.

Pre Requisites for Billig's Exercise

Before starting the exercises

- The bladder should be empty.
- Soon after full stomach meal, should not do exercises.
- Select open and well ventilated place for doing exercises.
- Wear loose cloths while doing exercises.

Some easy and practicable exercises are explaining here. Before going to do the exercises should warm up our body first.

Billigs exercise can done at any time but , the most appropriate period is 2 days before menstrual period and during the time of menstruation

Mainly Two Types of Exercises

- Warm up
- Stretching
    - Easy pose
    - Butterfly stretch
    - Regular crunches
    - Reverse crunches
    - Relaxation

Warm up

The aim of the general warm up is simply to elevate the heart rate and respiratory rate. This in turn increases the blood flow and helps with the transportation of oxygen and nutrients to the working muscles. This also helps to increase the muscle temperature, allowing for a more effective static stretch.

Method of Warm up

Stand simply. Take a deep breath to set up. Keep both hands on your waist. Tilt the head to all sides for 3minutes. Tilt your shoulders clockwise and anti clockwise direction. Then rotate both hands inwardly and outwardly .Then simple jog for 2 minutes. Come to straight. Hold both hands up, stretch side to side and forward , then came to normal position.

Exercise - I

Easy pose

- Sit down on the floor.
- Cross your legs.
- Clasp your hands around the knees.

Exercise - II

Butterfly Stretch

Do the butterfly yoga pose: First, sit on the floor with your back straight. Slowly bring the soles of your feet together. Hold on to your ankles, and let your knees drop as close as they can to the floor. Your legs should form a little diamond shape in front of you. Don't force your knees down or pull your feet in toward your groin. Close your eyes and take 5 deep breathes.

Exercise - III

Regular Crunches

Lie down on the floor (you can use a floor mat to rest on). Bend your knees and then hold your hands below the neck. Now, while exhaling, lift the upper part of your body. Remember, do not tuck your chin in the chest, your chin must be in a straight direction. Then while inhaling, go in the downward direction. Repeat the crunches 20 times.

Exercise - IV

Reverse Crunches

- Start the exercise by lying flat on your back, with your head on the floor and your arms behind your neck.
- Raise your feet to the air, keeping your knees slightly bent and then crossing your feet at the ankles. These create tension in the body to that the slightest move will affect the abdominal muscles. Lift your hips off the floor, keeping your back as straight as possible on the floor, hold at the top position, squeeze

in your abdominal muscles for added effect, and then lower your hips back to the floor.

- Then repeat.

Exercise - V

Pelvic Tilt

- Lie on flat. Bend your knees. Both hands to be the sides of the body. Strengthen the abdominal muscle, force the back to wards the floor and raise the pelvis. Continue this position for 10 seconds and relax. Repeat the same for 10 times.
- After the exercise relax for 10 minutes.

Relaxation

After the exercise, you should take rest for 10 minutes. Lie flat, both hands keep sides of the body and the legs are extended and slightly turned outward. Close eyes and concentrate your breath and completely relax the body and mind.

- Soon after exercise don't take bath.
- Regular exercise for 45 to 60 minutes provides a better feel. If there is no time at least 30 minutes daily and morning is more preferred for exercises.
- After the exercise should take 2 glasses of water.

Conclusion

Dysmenorrhoea is one of the common problem experienced by many adolescent girls. Physical exercises has been suggested as a non medical approach for managing the symptoms of dysmenorrhoea. It has been found useful to affect menstruation on many ways. Billigs exercises is one of the big plus for adolescent to relieve menstrual discomforts. It is an exercise which stretches the connective tissue around the pelvis, hip flexors and muscles of the abdomen.